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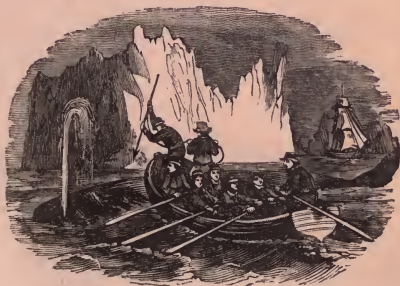








ENTERPRISE, INDUSTRY,
AND
ART OF MAN.



BOSTON:
G. C. RAND—WM. J. REYNOLDS & CO.

ENTERPRISE,
INDUSTRY AND ART
OF MAN,

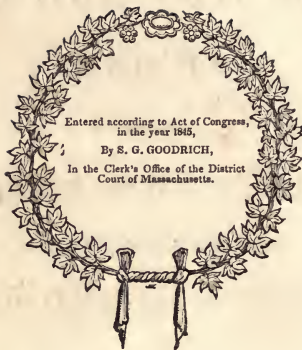
AS DISPLAYED IN
FISHING, HUNTING, COMMERCE,
NAVIGATION, MINING,
AGRICULTURE AND MANUFACTURES.

BY THE AUTHOR OF
PETER PARLEY'S TALES.

"The world must be circumnavigated before a washerwoman can take
her tea."

BOSTON:
PUBLISHED BY GEO. C. RAND, CORNHILL.
WM. J. REYNOLDS AND COMPANY.

1852.



PRESS OF GEORGE C. RAND & CO.

P R E F A C E .

I WAS dozing by my evening fire-side, when one of those hasty visions passed before my mind, which sometimes seem to reveal the contents of volumes in the space of a few seconds. It appeared as if every article of furniture in the room became suddenly animated with life, and endowed with the gift of speech; and that each one came forward to solicit my attention and beseech me to write its life and adventures.

The portly piano, advancing with a sort of elephantine step, informed me that its rosewood covering was violently torn from its birth-place in the forests of Brazil; its massive legs of pine grew in the wilds of Maine; the iron which formed its frame was dug from a mine in Sweden; its strings were fabricated at Rouen; the brazen rods of the pedals were made of copper from Cornwall mixed with silver from the mines of Potosi; the covering of the keys was formed of the tusks of elephants from Africa; the varnish was from India; the hinges from Birmingham, and the whole were wrought into their present form at the world-renowned establishment of Messrs. Chickering & Co., Washington street, Boston.

While I was musing on the singular fact that the four quarters of the globe had been ransacked for the materials of which to construct this single instrument, I heard an extraordinary rattling in the china closet. On opening the door and looking in, I beheld with amazement, every article,—plates, platters, bowls and tumblers, castors and cream-pots, salvers and salt-dishes—attitudinizing, as if inspired with some extraordinary emotion. All began to speak at once, and a confusion, worse than that of Babel, saluted my ears. Amid the din, I could gather only a few detached sounds. The set of phials in the castor-stand seemed to have the advantage of lungs, and I therefore gathered the following sentences: "I," said Mustard, "was raised by an old woman in France, and manufactured in Paris." "And I," said Pepper, "was cultivated by the swarthy Malays of Sumatra, and have made a voyage half round the world to get here!" "And I," said Ketchup, "came into existence as a mushroom, and was pickled by Underwood of Boston." "And I," said Soy, "was reared and manufactured in Japan!" "And I,"

said Sweet Oil, "came from the sunny climes of Italy." "And I," said Vinegar, with a scowl and a scream, "I came from hard cider!"

Bewildered by the clamors of the china closet, I shut the door in the face of the insurgents; but if I had silenced one source of annoyance, another was before me. The carpet rose and fell like waves beneath my feet, and at length one of the large circular figures stood erect, and with goggling eyes and enormous mouth, addressed me as follows:—"I was born upon the backs of sheep that were fed in Asia Minor; I was spun by those who pray five times a day to Mahomet; the colors that decorate me were gathered from the three kingdoms of nature, and I was woven in a machine, the invention of which consumed twenty centuries!"

Scarcely was this speech ended, when I saw the mirror swaying rapidly back and forth, and after a moment it exclaimed: "Listen to me! The glass which forms my face was once the waste sand of the pit: this was purified and exalted by fire. I was then polished by the artisans of Paris. The quicksilver which gives me my magical power, was dug from the mines of Almaden, a thousand feet below the surface of the earth: the gold which gilds my frame was washed from the Mountains of the Moon by the Niger, and having passed through the purse of the king of Ashantee, was beaten to the thinness of the thirty thousandth part of an inch." Hardly was this burst of rhetoric ended, when the Argand lamp declared that its oil once dwelt in the head of a whale seventy feet in length, and which had ploughed the Pacific for half a century. A book that lay upon the table, spoke of containing in its leaves a variety of rags, gathered from the four winds, each of which could tell a tale: and a sofa said something of hair from the tails of wild horses caught on the Pampas of South America, and lofty trees of mahogany cut down amid the mighty forests of Campeachy. The scene grew more and more bewildering—and as each object seemed to be endowed with a fiercer aspect and a louder tone, my heart beat violently and I awoke! Looking around, I saw before me a note from the printing office, which ran thus:—

"Dear Sir,—Please furnish us copy for the preface to the 'Enterprise, Industry, and Art of Man.' Yours, J. R."

If the kind and considerate reader will bear in mind that a preface, though placed at the beginning, is the last thing written; and if, moreover, he has the patience to peruse the following pages—he may come to the conclusion that the preceding dream was neither unnatural, nor a very unapt interpretation of the contents of the volume.

CONTENTS.

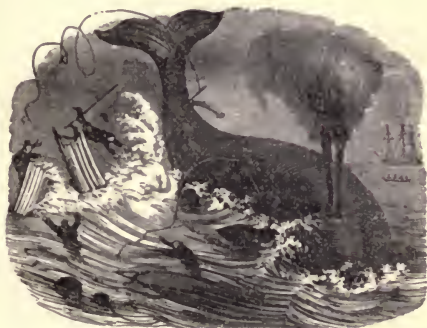
FISHERIES, ...	7
Whale Fishery, ...	7
Seal Fishery, ...	49
Cod Fishery, ...	56
Herring Fishery, ...	63
Mackerel Fishery, ...	67
Pearl Fishery, ...	67
Coral Fishery, ...	70
General remarks on Fisheries, ...	73
HUNTING, ...	74
Cattle Hunting, ...	74
Buffalo Hunting, ...	95
Bear Hunting, ...	103
The Fur Trade, ...	116
Bird Catching, ...	125
COMMERCE AND NAVIGATION, ...	135
Discoveries and Commercial Establishments of the Portuguese in India, ...	143
Voyages and Discoveries of Columbus, ...	156
Voyage and Discoveries of Magellan, ...	159
Voyage of Sir Francis Drake, ...	171
Voyages of the English toward the North Pole, ...	178
Voyages of the Dutch toward the North Pole, ...	186
Spanish American Commerce, ...	205
English East India Commerce, ...	210
Commerce of the North-west Coast of America, ...	215
Commerce by Caravans, ...	219

MINING, ...	236
Coal Mines, ...	247
Iron Mines, ...	262
Silver Mines, ...	269
Gold Mines, ...	276
Platina Mines	277
Diamond Mines, ...	278
Salt Mines, ...	285
Mines of Tin, Lead, Quicksilver, &c., ...	288
General Remarks on Mining, ...	290
WOOD-CUTTING, ...	294
Lumbering in Maine, ...	294
Logwood, ...	298
Mahogany, ...	302
AGRICULTURE, ...	305
Tea, ...	309
Sugar, ...	312
Coffee, ...	314
Tobacco, ...	316
Cotton, ...	322
Wool, ...	324
Products of the United States, ...	326
MANUFACTURES, ...	327
Cotton, ...	327
Manufactures of Lowell, ...	328
Woollen Manufactures, ...	329
Silk, ...	330
Linen, ...	330
Iron, ...	331
CONCLUSION, ...	333



FISHERIES.

THE WHALE FISHERY.



It is the opinion of most writers on the subject of the Whale Fishery, that the Biscayans were the first people who exercised their courage in attacking the great monster of the deep. These people, dwelling along the sea-coast, were chiefly fishermen. A particular species of whale used to be a frequent visiter to the shores of France and Spain, and, in pursuit of herrings and other small fry, would naturally cause serious damage among the nets of the fishermen of

Biscay and Gascony. Concern for the preservation of their nets, which constituted their principal property, would naturally suggest the necessity of driving these intruders from their coast.

When the Basques and Biscayans first ventured to attack a whale with their spears and arrows, they were doubtless surprised to find that, instead of being the ferocious and formidable monster which they had imagined him, he was in fact timorous and comparatively inoffensive. This observation doubtless had a tendency so far to encourage them, that some of the most adventurous were induced to approach a whale in the extravagant hope of vanquishing him in fight. Observing that after receiving their weapons he evinced no intention of resistance, but on the contrary, immediately dived to the bottom of the sea, and that on his return to the surface, he was quite exhausted and apparently in a dying state, they doubtless soon conceived the possibility of so entangling him as to ensure his capture.

The precise period at which the whale fishery thus originated, is not known; but as early as the sixteenth century, the Biscayans pursued the whale into distant seas. The English, in 1594, fitted out an expedition to Cape Breton, to fish for the whale and the walrus or sea-horse, and in succeeding years pursued the latter into high northern latitudes. In 1611, the English first attacked the whale near the shores of Spitzbergen. After this, the Dutch and other nations of Europe became participators in the risks and advantages of these northern expeditions.

The Greenland whale fishery was not an immediate result of the discovery of Spitzbergen, but arose

out of the enterprising character of the adventurers employed in commercial speculations, at this period. Whatever importance was attached to the discovery of this frozen region, its value was eclipsed by that of the whale fishery in the prolific seas adjacent, as it proved, in a short time, the most lucrative, and the most important branch of national commerce which had yet been offered to the industry of man. The whales captured by the Biscayans were not so large as those taken in the Polar Seas, nor so productive of oil. Moreover they soon ceased to frequent the Bay of Biscay, and the fishers were obliged to pursue their prey along the banks of Newfoundland and the coast of Iceland, in consequence of which the French whale fishery greatly declined.

The voyages of the Dutch and English to the Northern Ocean, in the attempt to discover a western passage through it to India, though they failed of their main object, laid open the haunts of the whale. The companions of Barentz, who discovered Spitzbergen in 1596, and of Henry Hudson, who soon after explored the same seas, represented to their countrymen the amazing number of whales with which they were crowded. Vessels were in consequence fitted out for the northern whale fishery by the English and Dutch, the harpooners and a part of the crew being Biscayans. They did not, however, confine their efforts to a fair competition with each other as fishers. The English Muscovy Company obtained a Royal Charter, prohibiting the ships of all other nations from fishing in the seas round Spitzbergen, on pretence of its having been discovered first by Sir Hugh Willoughby. The

Company finding the Dutch whalers frequenting this neighborhood, attempted to vindicate their pretensions by force, and several hostile encounters took place between the vessels of the two nations. The conviction at length became general that there was room enough for all parties in the northern seas, and in order to avoid the chance of coming into collision with each other, they parcelled Spitzbergen and the adjacent ocean into districts which were respectively assigned to the English, Dutch, Hamburgians, French, Danes, &c. The Dutch being thus left to prosecute the whale fishery unmolested, soon acquired a decided superiority over all their competitors.

When the Europeans first began to prosecute this fishery on the coast of Spitzbergen, whales were everywhere found in vast numbers. Ignorant of the strength and stratagems of the formidable foe by whom they were now assailed, instead of betraying any symptoms of fear, they surrounded the ships and crowded all the bays. Their capture was in consequence a very easy task, and the whalers killed many which they were obliged to abandon in consequence of their ships being full. While the fishes were thus easily obtained, it was the practice to boil the blubber on shore in the north, and to bring home only the oil and the whalebone. Perhaps nothing can give a more vivid idea of the extent and importance of the Dutch fishery in the middle of the seventeenth century than the fact that the men established a considerable village, the houses of which were previously prepared in Holland, on the northern coast of Spitzbergen. This place was called by the appropriate name of *Smeerenberg* or

"Grease-mountain." It was the grand rendezvous of the Dutch whale ships, and was amply provided with boilers, tanks, and every kind of apparatus requisite for preparing the oil and the bone. The fleets of whalers were attended by a number of provision ships, the cargoes of which were landed at Smeerenberg, and this place abounded during the busy season, with well-furnished shops, good inns, &c., so that many of the conveniences and enjoyments of Amsterdam were found within about eleven degrees of the north pole! It is particularly mentioned that the sailors and others were supplied with what a Dutchman regards as a very great luxury, namely, *hot rolls for breakfast*, and that a signal was given by blowing a horn, when they were ready to be drawn from the oven. Smeerenberg was founded about the same period with the colony of Batavia, and it was for a considerable time doubtful whether the former was not the more important establishment.

During the flourishing period of the Dutch fishery, the quantity of oil made at Smeerenberg was so great that it could not be carried home by the whale ships, and every year vessels were sent out in ballast to assist in importing the produce of this valuable fishery. But the same cause that had destroyed the fishery of the Biscayans ruined that of Spitzbergen. The whales became scarce, shy, and difficult to catch. They retreated first to the open seas, and then to the great banks of ice on the east coast of Greenland. When the site of the fishery had been thus removed to a distance from Spitzbergen, it was found most economical to send the blubber directly to Holland. Smeer-

enberg was, in consequence, totally deserted, and its exact position is now difficult to determine.

The right to carry on the fishery was, in 1614, granted by the Dutch government, exclusively to a company formed for that purpose. In consequence of this monopoly, the fishery though very extensive, was not highly profitable. But in 1642 the business was thrown open to all adventurers, and soon, by a vast increase of profit, exhibited a striking example of the benefits of free competition. The private whale ships of the Dutch were fitted out on a plan that secured the utmost economy and vigilance on the part of every one connected with them. The hull of the vessel was furnished by an individual, who commonly acted as captain; a sailmaker supplied the sails; a cooper the casks, &c. The parties engaged as adventurers in the undertaking. The cargo being brought to Holland and disposed of, each person shared in the produce according to his proportion of the outfit. The crew were engaged on the same principle, so that every one had a motive to exert himself, to see that all unnecessary expenses were avoided. The Dutch whale fishery was in its most flourishing state about the year 1680, at which time it employed 260 ships and 14,000 sailors. At present it is entirely extinct: in 1828 a solitary ship sailed from Holland, being the last attempt of that nation to prosecute a trade for which they were once so distinguished.

The English whale fishery, like that of Holland, was originally carried on by an exclusive association. The Muscovy Company was indeed speedily driven from the field, but it was immediately succeeded by

others which did not prove more fortunate. In 1725 the South Sea Company embarked largely in the business and prosecuted it for eight years, when, having lost a large sum, they abandoned it. But the British government, judging it highly important to support this trade, granted, in 1732, a bounty of a pound sterling a ton to every ship of above 200 tons' burthen engaged in it. In 1749 this bounty was doubled. Many ships were fitted out, as much for the purpose of catching the bounty as of catching whales. Deceived by the prosperous appearance of the fishery, the government imagined it was firmly established, and in 1775 the bounty was reduced to 30 shillings, which caused the trade to fall off nearly two-thirds in five years. The bounty continued to fluctuate from 40 to 20 shillings till 1824 when it entirely ceased.

The seas between Spitzbergen and Greenland are now nearly abandoned by the whalers, who have changed their fishing ground to Davis' Straits and Baffin's Bay, and the sea which washes the coast of West Greenland. The Dutch whalers first began to frequent Davis' Straits in 1719, and as the whales had not before that time been pursued into this vast recess, they were found in greater numbers than in the waters around Spitzbergen. It was not till a comparatively late period that Davis' Straits began to be frequented by English whalers, and even so late as 1820, when Captain Scoresby published his valuable work on the whale fishery, the Greenland Sea was the most frequented. But, within a few years the Greenland fishery has been almost entirely abandoned. The various discoveries made by Parry and Ross in the

seas and inlets to the west of Davis' Straits and Baffin's Bay, have made the fishers acquainted with several new and advantageous places for the prosecution of their business. What further revolutions the northern whale fishery may be destined to undergo, it is impossible to foresee; but there can be little doubt that the same results that have happened elsewhere, will occur in Davis' Straits, and that it will be necessary to pursue the whale to new, and perhaps to still more inaccessible haunts. The sea in these straits is less incommoded with field ice than the Greenland and Spitzbergen waters, but it abounds with icebergs; and the fishery carried on in Baffin's Bay and Lancaster Sound, is more dangerous perhaps than any that has hitherto been attempted.

The British ships employed in the northern whale fishery, amounted, in 1789, to 161; at present, they do not exceed half that number. The business has for some time, partaken more of the nature of a lottery than of a regular industrial pursuit. Frequently the ships do not procure above half a cargo, and sometimes nothing at all. The risk of shipwreck is also very great.

Before proceeding farther in our history of the whale fishery, it may be well to give a short description of the animal, and the methods of pursuing and capturing him. There are two species of this monster of the deep which are valuable to the fisher, the common Greenland, or *right whale*, as he is termed by the sailors, and the *spermaceti whale*. The former, when full grown, varies in length from fifty to sixty-five feet, and sometimes reaches even eighty feet; its great-

est circumference is from thirty to fifty feet. It is thickest a little behind the fins, or in the middle, from whence it gradually tapers in a conical form, towards the tail, and slightly towards the head. Its form is cylindrical from the back to within ten feet of the tail, beyond which it becomes somewhat quadrangular. The head has rather a triangular shape. The under part of this is flat; it measures sixteen or twenty feet in length, and ten or twelve in breadth. The lips extend fifteen or twenty feet in length, and open to the width of five or six feet. A whale's mouth is capable of containing a ship's jolly-boat full of men.

The fins, two in number, are from seven to nine feet long, and two feet broad. There is no dorsal fin. The tail, comprising in a single surface, eighty or one hundred square feet, is a formidable instrument of motion and defence. It is only five or six feet long, but its width is from eighteen to twenty-six feet; its strength is enormous. The eyes of the whale are remarkably small in proportion to the bulk of the animal's body, being little larger than those of an ox. He has no external ear, nor can any orifice for the admission of sound be discovered until the skin is removed. On the highest part of the head are two blow holes, six or eight inches apart; these are the proper nostrils of the whale, and by their *spouting*, often betray the course of the animal to those in pursuit. The mouth has no teeth, but in lieu of them, two extensive rows of whalebone, which also lines the roof of the mouth.* The skin of the body is slightly

* *Whalebone*, is the name given to the horny layers laid lengthwise in the mouth of the whale. These have fringes

furrowed, like the water lines on coarse paper. Immediately under this, lies the blubber or fat, encompassing the whole body of the animal together with the fins and tail. Its color is yellowish white, yellow or red; its thickness all round the body is from eight to twenty inches. The lips are composed almost entirely of blubber, and yield from one to two tons of pure oil each. The blubber and the whalebone are the only valuable parts of the animal. The blubber in its fresh state is without any unpleasant smell, and it is not until after the termination of the voyage, when the cargo is unstowed, that a Greenland ship offends the nostrils. A stout whale of sixty feet weighs seventy tons, and will yield six or seven thousand gallons of oil.

The spermaceti whale or cachelot, differs in several respects from the other species. It is somewhat smaller, and feeds in a different manner. The Green-

along the edges, and as the animal has no teeth, he takes in a mouthful of sea water, which contains a quantity of medusæ and other small marine animals; when the mouth is closed, the water flows out between the fringes, which operate as a sieve or screen, leaving the medusæ behind, to be swallowed. It is impossible to conceive of an apparatus more admirably adapted to its purpose, than this. The laminæ of whalebone are compacted together, by what is called the *gum*. There are about 300 of these plates or blades on each side of the mouth; the middle ones are the longest, and are sometimes fifteen feet in length. The width at the root end is ten or twelve inches, and the thickness four or five tenths of an inch. This article is used for stays, frames of umbrellas, the frame work of seats, &c. It sells in London for £50 to £150 sterling, per ton.

The Sperm Whale.



land whale is supplied with a curious and complicated apparatus composed of numerous strips of what we call *whalebone*, which operates as a kind of sieve or screen, by means of which, it separates its food of medusæ and other small sea animals, from the water; the *cachelot*, on the contrary, has sharp teeth, designed for seizing its prey, which seems to consist chiefly of the squid or *sepia*. It has also an external orifice for hearing, which is wanting in the Greenland whale. It does not supply whalebone, but yields *spermaceti*, with a peculiarly fine kind of oil, both of which are found in the head of the animal, in a thin membranous case. The head is enormously large, and the quantity of these valuable materials which it contains, renders it a special object of desire to the whalers. It is gregarious, the herds being divided into two kinds, one consisting of females, the other of young whales, not fully grown.

These herds are called by whalers "*schools*," and one of these sometimes contains as much as five or six hundred. With each herd or school of females, are always from one to three large bulls, the lords of the herd, or as they are called, the "*school-masters*." The full grown whales, or "*large whales*," almost always go separately, in search of food; when they are seen in company, they are supposed to be migrating from one feeding ground to another.

The British whale-ships seldom attempt to penetrate the northern seas before the month of April, when the sun having entered the northern tropic, begins to enlighten the polar regions throughout the twenty-four hours. Storms and foggy weather usually prevail in

the spring, and these combined with the darkness of night and crowded ice, produce as gloomy a combination of circumstances, as can well be imagined. Usually, the fish are most plentiful in June. The fishery usually terminates in July.

The northern whale-ships are built expressly for the purpose, in a most substantial manner, to resist exposure to the ice; they are sometimes treble planked; the stern and bows are fortified in the strongest manner by timber and iron plates. The crew of a ship consists of forty or fifty men, all of whom go on shares in the adventure. On reaching the fishing station, the whale boats are prepared for service, and slung over the ship's sides on *darits* or cranes; they are furnished with stores, harpoons, lances, &c., and everything is kept in such readiness that they can be manned and lowered into the water at a minute's notice. Whenever there is a probability of seeing whales, the master or some one of the officers takes his station in the *crow's nest*. This is a sort of watch-tower placed on the maintop-mast or topgallant-mast head, to shelter the observer from the keen piercing wind of the north. Commanding from this elevated point an extensive prospect of all the surrounding sea, he keeps an anxious watch for the appearance of a whale. The moment one is seen, he gives notice to the watch on deck, part of whom leap into a boat, are lowered down and push off in pursuit. If the whale be large, a second boat is immediately despatched to the assistance of the first. The harpooner and boat-steerer keep a careful watch on all sides, while each of the rowers looks out in the direction of his oar.

Many precautions must be observed in approaching a whale to prevent him from taking the alarm. As he is dull of hearing, but quick of sight, the boat-steerer always endeavors to get behind him.

A whale seldom abides longer on the top of the water than two minutes, and generally remains from five to ten minutes below. In this interval, he sometimes swims half a mile or more; and as the fisher has very rarely any certain intimation of the place in which he will re-appear, the difficulty of approaching him sufficiently near during his short stay on the surface, to reach him with the harpoon, may be readily apprehended. It is, therefore, a primary consideration with the harpooner always to place his boat as near as possible to the spot in which he expects the fish to rise, and he thinks himself successful in the attempt when the fish comes up "within a start," that is, within the distance of about 200 yards. Whenever a whale lies on the surface of the water, unconscious of the approach of his enemies, the hardy fisher rows directly upon him, and the instant before the boat touches, buries the harpoon in his back. But if, while the boat is yet at a little distance, the whale should indicate his intention of diving by lifting his head and then plunging it under water, and raising his body until it appears like the large segment of a sphere, the harpoon is thrown from the hand, or fired from a gun. The wounded whale, in the surprise and agony of the moment, makes a convulsive effort to escape. This is the moment of danger. The boat is exposed to the most violent blows from his head or fins, but particularly from his ponderous tail,

which sometimes sweeps the air with such tremendous fury that boat and men are exposed to one common destruction. The first effort of a "fast fish," or whale that has been struck, is to escape from the boat by sinking under water. After this he pursues his course directly downward, or re-appears at a little distance, and swims with great celerity near the surface of the water towards any neighboring ice, among which he imagines he may obtain shelter, or he returns instantly to the surface, and gives evidence of his agony by the most convulsive throes, in which his fins and tail are alternately displayed in the air and dashed into the water with tremendous violence.

To the harpoon is attached the end of a very long line, which is nicely coiled up in the bottom of the boat, so that it may run out freely as the whale makes off. But to retard as much as possible his flight, it is usual for the harpooner to cast one, two, or more turns of the line round a kind of post called a *bollard*. Such is the friction of the line when running round the bollard, that it frequently envelops the harpooner in smoke, and if the wood were not frequently moistened, it would take fire. During the capture of one whale, a groove is sometimes cut in the bollard nearly an inch in depth. When the line happens to become entangled, it sometimes draws the boat under water, and if no boat or piece of ice be at hand, the crew are in danger of drowning. When the line is nearly run out, and more is wanted, a signal is made for help by elevating an oar, and sometimes two, three, or four, according to the nature of the exigence. It is usual

in order to prevent accidents, for two boats to go in company.

The average stay under water, of a wounded whale which steadily descends after being struck, is about half an hour. The greater the velocity, the more considerable the distance to which he descends, and the longer the time he remains under water—so much greater in proportion is the extent of his exhaustion, and the consequent facility of effecting his capture. As soon as he re-appears, the assisting boats pull after him with the utmost speed, and as they reach him, each harpooner plunges his weapon into his back. He is afterwards assailed with lances; and at length, when exhausted by numerous wounds and the loss of blood, he begins to indicate the approach of death by spouting blood from his nostrils. The sea to a great extent around, is dyed with blood, and the boats and men are sometimes drenched with the same. His track is likewise marked by a broad pellicle of oil, which exudes from the wounds and appears on the surface of the sea. The death of the whale is sometimes preceded by a convulsive struggle in which his tail is reared, whirled, and violently jerked in the air with a noise that resounds to the distance of miles.

The ease with which some whales are subdued, and the slightness of the entanglement by which they are taken, are truly surprising. But with others it is equally astonishing, that neither line nor harpoon nor any number of these are sufficient to ensure their capture. Many instances have occurred where whales have escaped from four, five, or even more harpoons, while others equally large have been killed by only

one. Indeed, whales have been taken in consequence of the entanglement of a line, without any harpoon at all. The following anecdote to this effect is given by Scoresby.

A whale was struck and killed by the boat of a British ship in Davis' Straits. The line was detached from the harpoon, and while the boat's crew were hauling it in, on a sudden, to their great astonishment, the line was pulled away from them with the same force and violence as by a whale when first struck. They gave the signal and their shipmates flocked toward them, every one expressing a degree of astonishment equal to their own, but all agreeing that a fish was fast to the line. In a few minutes they were confirmed in their opinion, and relieved from suspense by the rising of a large whale close by them, exhausted by fatigue, and having every appearance of being struck. He permitted himself to be attacked by several harpoons at once, and was speedily killed. On examination after death, they found the line belonging to the above mentioned boat, in his mouth, where it was still firmly held by the compression of the lips. It appeared that the end of the line after being loosened from the whale first killed, was in the act of sinking in the water; the fish in question, engaged in feeding, was advancing with his mouth wide open, and accidentally caught the line between his extended jaws. A sensation so utterly new, had caused him to shut his mouth and grasp the line which was the cause of his alarm, so firmly that a harpoon could not have attached it to him more effectually.

In July, 1813, Scoresby's ship lay by the edge of a

large sheet of ice, in which were several thin parts, and some holes. Here a whale was heard blowing ; and a harpoon with a line connected with it was conveyed across the ice from a boat on guard, and the harpooner succeeded in striking the whale at the distance of 350 yards from the verge. It dragged out ten lines, (2400 yards,) and was supposed to be seen blowing in different holes in the ice. After some time he appeared on the exterior, and a harpoon was thrown at the moment he was on the point of diving beneath. About a hundred yards from the edge he broke through the ice with his crown, where it was a foot thick, and respired through the opening. He then resolutely pushed forward, breaking the ice as he advanced, in spite of the lances constantly directed against him. He reached at length a kind of basin in the field where he floated on the surface of the water without any incumbrance from the ice. His back being fairly exposed, the harpoon struck from the boat on the outside, was observed to be so slightly fixed in him that it was ready to drop out. Some of the officers lamented this, and expressed a wish that the harpoon were better fastened, observing that if it should slip out, either the fish would be lost, or they would be under the necessity of cutting it up where it lay, and dragging the pieces of blubber over the ice to the ship, a labor which every one was anxious to avoid. No sooner was the wish expressed, than one of the sailors, a bold enterprising fellow, stepped forward and volunteered his services to strike it farther in. Not at all intimidated by the surprise which was manifested in every countenance, by so daring a proposal, he

pulled out his jack-knife, leaped upon the back of the living whale and cut the harpoon out. Stimulated by his courageous example, one of his companions proceeded to his assistance. While one of them hauled upon the line, and held it in his hands, the other set his shoulder against the extremity of the harpoon, and though it was without a stock, he contrived to strike it again into the fish more effectually than it was at first. The whale was in motion before they finished; after they got off his back, he advanced a considerable distance, breaking the ice all the way, and survived for a quarter of an hour.

When a ship approaches a considerable field of ice, and finds whales, it is usual to moor to the lee side of it. Boats are placed on the watch, and stationed at intervals of 100 or 150 yards from one another, along the edge of the ice. It is not uncommon for a great number of ships to moor to the same sheet of ice. When the whale fishery of the Dutch was in its most flourishing state, above a hundred sail of ships might sometimes be seen moored to the same field.

Fishing in storms never takes place except when a gale arises immediately after a fish is struck; but in foggy weather, the fishery, though hazardous, is not altogether impracticable. The fogs of the north in June and July are generally thick and lasting. They are so dense that objects cannot be seen at a hundred yards' distance. When a whale is struck in one of these fogs, and conducts favorably, that is, descends almost perpendicularly, and on his return to the surface, remains nearly stationary or moves round, in a small circle, he is usually captured without much haz-

ard or difficulty. But when, on the contrary, he proceeds with any considerable velocity in a horizontal direction, or obliquely downwards, he soon drags the boats out of sight of the ship, and shortly so confounds the fishers in the thick mist, that they lose all knowledge of the direction of the vessel. If they get beyond the reach of the sound of a bell, or a cannon, they run great hazard of being lost.

"On the 25th of June, 1812," says Scoresby, "one of the harpooners belonging to the *Resolution*, of Whitby, under my command, struck a whale by the edge of a small floe of ice. Assistance being promptly afforded, a second boat's lines were attached to those of the first boat in a few minutes after the harpoon was discharged. The remainder of the boats proceeded to some distance, in the direction the fish seemed to have taken. In about a quarter of an hour the fast boat, to my surprise, again made a signal for lines. As the ship was then within five minutes' sail, we instantly steered towards the boat with the view of affording assistance. Before we reached the place, however, we observed four oars displayed in signal order, which by their number, indicated a most urgent necessity for assistance. Two or three men were at the same time seated close by the stern, which was considerably elevated, for the purpose of keeping it down, while the bow of the boat, by the force of the line, was drawn down to the level of the sea, and the harpooner by the friction of the line round the bollard, was enveloped in smoky obscurity. At length, when the ship was scarcely a hundred yards distant, we perceived preparations for quitting the boat. The

sailors' pea jackets were cast upon the adjoining ice, the oars were thrown down, the crew leaped overboard, the bow of the boat was buried in the water, the stern rose perpendicularly and then it majestically disappeared. The harpooner having caused the end of the line to be fastened to the iron ring at the boat's stern, was the means of its loss, and a tongue of the ice on which was a depth of several feet of water, kept the boat by the pressure of the line against it, at such a considerable distance, as prevented the crew from leaping upon the floe. Some of them were, therefore, put to the necessity of swimming for their preservation, but all of them succeeded in scrambling upon the ice, and were taken aboard of the ship a few minutes afterward.

"Several ships being about us, there was a possibility that some person might attack and make a prize of the whale, when it had so far escaped us that we no longer retained any hold of it. We set all sail the ship could safely sustain, and crowded through several narrow and intricate channels in the ice, in the direction I observed the fish had retreated. After a little time, it was descried by the people in the boats at a considerable distance to the eastward; a general chase immediately commenced, and in the space of an hour, three harpoons were struck. We now imagined the fish was secure, but our expectations were premature. The whale resolutely pushed beneath a large floe that had recently been broken to pieces by the swell, and soon drew all the lines out of the second fast boat, the officer of which, not being able to get any assistance, tied the end of his line to a hammock of ice, and

roke it. Soon afterward, the two other boats, still *fast*, were dragged against the broken floe, when one of the harpoons drew out. The line of only one boat therefore, remained fast to the fish, and this, with six or eight lines out, was dragged forward into the shattered floe with astonishing force. Pieces of ice, each of which was sufficiently large to have answered the purpose of a mooring for a ship, were wheeled about by the strength of the whale, and such was the tension and elasticity of the line, that whenever it slipped clear of any mass of ice, after turning it round into the space between any two adjoining pieces, the boat and its crew flew forward through the creek with the velocity of an arrow, and never failed to launch several feet upon the first mass of ice that it encountered.

“ While we scoured the sea around the broken floe, with the ship, and while the ice was attempted in vain by the boats, the whale continued to press forward in an easterly direction, toward the sea. At length, when fourteen lines—about 1680 fathoms—were drawn from the fourth fast boat, a slight entanglement of the line broke it at the stern. The fish, then, again made its escape, taking along with it a boat and twenty-eight lines. The united length of these was 6720 yards, or upwards of three English miles and three quarters; value, with the boat, £150 sterling. The obstruction of the sunken boat to the progress of the fish, must have been immense, and that of the lines likewise considerable, the weight of these alone being 3500 weight.

“ So long as the fourth fast boat, through the medium of its lines, retained its hold of the fish, we searched

the adjoining sea with the ship in vain ; but in a short time after the line was divided, we got sight of the object of pursuit, at the distance of near two miles to the eastward of the ice and boats, in the open sea. One boat only, with lines, and two empty boats, were reserved by the ship. Having, however, fortunately, fine weather, and a fresh breeze of wind, we immediately gave chase under all sail, though it must be confessed, with the insignificant force by us, the distance of the fish, and the rapidity of its flight considered, we had but very small hopes of success. At length, after pursuing it five or six miles, being at least nine miles from the place where it was struck, we came up with it, and it seemed inclined to rest after its extraordinary exertions. The two dismantled or empty boats having been furnished with two lines each, a very inadequate supply, they, together with the one in a good state of equipment, now made an attack upon the whale. One of the harpooners made a blunder ; the fish saw the boat, took the alarm, and again fled. I now supposed it would be seen no more ; nevertheless, we chased nearly a mile in the direction I imagined it had taken, and placed the boats to the best of my judgment, in the most advantageous situations. In this case, we were extremely fortunate. The fish rose near one of the boats, and was immediately harpooned. In a few minutes, two more harpoons entered its back, and lances were plied against it with vigor and success. Exhausted by its amazing exertions to escape, it yielded itself at length to its fate, received the piercing wounds of the lances without resistance, and finally died without a struggle."

The same writer describes the following singular, yet unsuccessful chase. "The weather was fine, and no ice in sight. A boat was despatched toward one of the fish we saw, which was immediately struck. The men were already considerably fatigued, but of course proceeded in the boats to the chase of the fast fish. It made its re-appearance before they all left the ship. Three boats then approached it, unluckily at the same moment. Each of these so incommoded the others, that no second harpoon could be struck. The fish then took the alarm, and ran off towards the east, at the rate of about four miles per hour. Some of the boats gave chase, and others took hold of the fast boat, and were towed by it to windward. When two boats by great exertions on the part of their crews, had got very near to the fish, and the harpooners were expecting every moment to be able to strike it, it suddenly shifted its course when under water, and in a few minutes discovered itself in a southerly direction, at least half a mile from any boat. It then completed a circuit round the fast boat with a sweep of nearly a mile as a radius, and though followed in its track by the boats, it dived before any of them got near it, and evaded them completely. When it appeared again, it was at least half a mile to windward of any of them, and then continued arduously advancing in the same direction. The 'lipper' on the water arising from a strong breeze of wind, much impeded the velocity of the boats, and rapidly exhausted the little remaining strength of the crews.

"At various times during the pursuit, the boats having the most indefatigable crews, reached the fish

within ten or fifteen yards, when, apparently aware of their design, it immediately sunk and changed its course, so that it invariably made its next appearance in a quarter where no boats were near. The most general course of the whale being to windward, it soon withdrew all the boats many miles from the ship, notwithstanding our utmost efforts under a pressure of sail, to keep near them. After six or seven hours' pursuit, without success, the sky became overcast, and we were suddenly enveloped for some time in a thick fog. This circumstance excited much alarm for the safety of the boats; we were soon, however, relieved by the fog being dispelled. In this interval, the boats were all moored to the fast boat, the men being fearful of being dispersed; but on the disappearance of the fog, the pursuit was re-commenced with more determined vigor. Still, the harpooners were not able to succeed. They were now convinced of the necessity of using every measure to retard the flight of the fish. For this purpose, they slacked out new lines, a weight in air of $11\frac{1}{4}$ cwt., while the crew of the fast boat endeavored further to retard its progress, by holding their oars firmly in the water as if in the act of backing the boat astern; but this plan did not succeed. They then lashed two or three boats with their sides to the stern of the fast boat, and these were dragged broadside first, with little diminution of velocity for some time. But the fish at length feeling the impediment, suddenly changed its course, and again disappointed the people in two of the boats, which had got extremely near it.

“Several times the harpooners seized their wea-

pons, and were on the point of launching them at the fish, when in an instant, it shot from them with singular velocity, and then disappeared. In this way, the chase was continued for fourteen hours, when the fish again turned to leeward. But the men, exhausted by such uncommon exertion, together with the hard labor to which they had previously been subjected, at the same time being without meat or drink, and sparingly shielded from the inclemency of the weather by clothes drenched in oil, were incapacitated from taking advantage of the only chance they had ever had of success, from the commencement of the chase; they did, it is true, make the attempt, but their efforts were too feeble to be of any service.

“ By this time, we had reached the boats with the ship; the wind had increased to a gale, and a considerable sea had arisen. We had no hope, therefore, of success; as, however, we could not possibly recover the lines at this time, stormy as the weather was, we applied a cask as a buoy to support them, and moored an empty boat leaving a jack flying in it, to the cask, with the intention of keeping near it during the storm, and with the expectation of recovering our lines, and a faint hope of likewise gaining the fish after the termination of the gale. The boat was then abandoned, and all hands fatigued and oppressed with hunger and thirst, and sore with cold, were safely, but not without difficulty, taken on board the ship at the expiration of $15\frac{3}{4}$ hours of unremitting labor under circumstances particularly unfavorable. We made an attempt to keep near the boat with the ship, but the increasing force of the gale drove us, in spite

of every effort, about twenty miles to leeward. On the first cessation we made all sail and plied towards the boat, and although the weather was constantly foggy, we succeeded in finding it, recovered boat and lines, but lost the whale. This disagreeable and unsuccessful adventure occupied between three and four days."

These perilous adventures are sometimes attended by fatal consequences. In 1810, the *Aimwell*, a British whaler, while in the Greenland seas struck a fish by one of her boats. Instead of sinking immediately on receiving the harpoon, as is usual, he only dived for a moment and then rose beneath the boat, struck it in the most furious manner with his fins and tail, stove and upset it, and then disappeared. The crew, seven in number, got on the bottom of the boat, but the unequal action of the line which for some time remained entangled with the boat, rolled it occasionally over and thus plunged the crew repeatedly in the water. Four of them after each immersion, recovered themselves and clung to the boat, but the other three, one of whom was the only person who could swim, were drowned before assistance could arrive. The four men in the boat being rescued, the attack was renewed, and two more harpoons were struck. But the whale, irritated instead of being alarmed by his wounds, turned upon his assailants. The sea was all in a foam from his furious motions; his tail and fins were in awful play: in a short time harpoon after harpoon drew out, the whale was loosened from his entanglement and escaped.

After the whale is properly secured alongside of the

ship, the harpooners, having their feet armed with spurs to prevent them from slipping, descend upon the fish. Two boats attend upon them and serve to hold their knives and other apparatus. The harpooners divide the fat into long slips which are stripped off the whale by a tackle. This process is called *flensing*. Where sharks are about the ship they generally help themselves very plentifully during this operation, but they often pay for their temerity with their lives. Sea-fowl are also in attendance in immense numbers. They seize the fragments occasionally disengaged by the knife, either in the water or on the wing. After the blubber is received on board it is cut into small pieces and put into casks through the bung-hole. This process is called "making off." The blubber which is originally in a state of firm fat, is found on its arrival in a warm climate, to be in a great measure resolved into oil. From the remainder, the oil is extracted by boiling.

The decline of the British northern whale fishery appears to be owing to three principal causes. In the first place, the introduction of gas into general use in Great Britain has materially lessened the demand for whale oil. In the second place, the former fishing fields round Spitzbergen have been greatly exhausted, and whalers have been under the necessity of venturing into more perilous latitudes for the object of their pursuit. In the third place, a loss of life and property in this fishery has taken place of late years so extensive and alarming, that mercantile men have been unwilling to risk their capital, and seamen their existence in such ill-fated expeditions. In the year 1830, not

less than eighteen out of eighty-seven whale ships were lost in the Davis' Straits fishery; and twenty-four returned without taking any fish. This state of things has been since growing worse, and in 1837, several vessels were lost, and many others locked up in the ice during the winter. The greater part of the crews were lost, and the remainder experienced the most cruel sufferings.

From the northern whale fishery we now turn to that of the South, where this branch of industry is pursued on the grandest scale. The fishery ground there extends over the whole South Atlantic, the Pacific and Indian Oceans; it is in these waters that the spermaceti whale is obtained. The method of taking it is not materially different from that already described in relation to the "right whale"; but it is attended by perils of another sort. Timid as it is, the cachelot or spermaceti whale often causes such danger by its convulsive efforts to escape, that its capture is not less perilous than that of the northern whale among the polar ice. Young bulls, as they are called, in particular, frequently give enormous trouble to their pursuers, and sometimes turn upon them with great fury, intent on mischief, attacking them with teeth and tail. While the British northern whale fishery has fallen off, that of the south has much increased. As in the case of the former, bounties were at first given by government, but in 1821, these were withheld, and the business was fairly left to private enterprise.

But the British, and indeed all the nations of Europe have been far surpassed in this fishery by the people of the United States; and the American

whale fishery now constitutes one of the most important branches of naval enterprise of this or any other nation. The vessels employed in this fishery in 1844, amounted to 696, a greater number by far than that of all the European whale ships combined. The remarkable enterprise of our countrymen in this department of maritime adventure attracted the notice of Mr. Burke at a very early period, and in 1774, he uttered the following language; "Look at the manner in which the New England people carry on the whale fishery. While we follow them among the tumbling mountains of ice and behold them penetrating into the deepest frozen recesses of Hudson's Bay and Davis' Straits; while we are looking for them beneath the Arctic Circle, we hear that they have pierced into the opposite region of polar cold; that they are at the antipodes, and engaged under the frozen serpent of the South. Falkland Island, which seemed too remote and too romantic an object to the grasp of national ambition, is but a stage and resting-place for their victorious industry. Nor is the equinoctial heat more discouraging to them than the accumulated winter of both the poles. We learn that while some of them draw the line or strike the harpoon on the coast of Africa, others run the longitude and pursue their gigantic game along the coast of Brazil."

The first whaling expedition of the people of Nantucket took place within twenty or thirty years of the settlement of the island. A whale happened to venture into the harbor or was driven in by a storm. This excited the curiosity of the inhabitants and led them to devise means to prevent his escape. Their

Yankee ingenuity, unassisted by any practical knowledge, invented a harpoon with which they attacked and killed this unexpected visitor. Such a success encouraged them to undertake the whale fishery as a permanent business, as the whales were very numerous upon their shores. The pursuit of whales commenced in boats from the island, and increased from year to year, till it became the principal occupation of the people. The Indians who remained in considerable numbers upon the island, had always been fond of fishing, and readily joined with the whites in this new pursuit, and willingly submitted to any station assigned them. By their assistance the whites were enabled to fit out and man a far greater number of boats than they could have equipped of themselves. Nearly every boat was manned in part, and many almost entirely by natives. Some of the most skilful were made steersmen, and some were allowed to head the boats. Thus encouraged they soon became experienced whalers and capable of conducting any part of the business. Sometimes during the pleasant days of winter they ventured off in their boats nearly out of sight of land; we are told that the winters although equally cold, were not then so boisterous as at present, but that the sea would sometimes continue calm for a week or a fortnight at a time.

After being killed and towed to land, the whale was flensed by drawing off the strips of blubber with a capstan, and the oil was extracted in their "try-houses," which at that early period adjoined their dwellings. To enable the people to discover whales at a distance, a mast was erected near the shore

upon which they climbed, to look out for their game. There appears to have been no decrease in the number of whales during the first thirty or forty years from the beginning of the fishery. The greatest number killed and brought to shore in one day was eleven. This method of whaling continued till about the middle of the last century, when the whales became scarce, and it was by degrees abandoned. It is remarkable that, although the people of Nantucket were obliged to teach themselves this dangerous occupation, and to carry it on under peculiarly hazardous circumstances, not a single life was lost in the business during the seventy years preceding 1760.

All the whales which were killed in this quarter were of the "right" species. The first spermaceti whale known to the inhabitants was driven ashore dead on the south-west part of the island. There were so many claimants of this prize that it was difficult to decide who should have it. The Indians claimed the whale, because they found it; the whites claimed it under their patent, which gave them the property of the territory. An officer of the crown put in a claim in behalf of the king, for according to ancient English laws when a whale is driven ashore the head belongs to the king and the tail to the queen—a whimsical regulation, the origin of which is not known. After considerable discussion among the contending parties, it was settled that all treasure-trove of this sort should belong to the parties who made the discovery. The spermaceti at that time was esteemed to be worth its weight in silver, as a universal medicine.

When the whales had become scarce, and appre-

hensions were felt that this branch of industry would soon be extinct, it is said that an old man pointed to the broad ocean, and exclaimed, "There is a green pasture where our children's grandchildren will go for bread." The first "deep whaling," as it was called, to distinguish it from "shore whaling," was performed in vessels of about thirty tons, which made cruises of about six weeks. The business increased so rapidly that in a short time Nantucket did not furnish seamen enough to man the vessels, and recourse was had to Cape Cod, and the shores westward as far as Long Island. Larger craft were now employed, and they ventured as far as the Azores, and even into Davis' Straits, to the coast of Guiana and Brazil. As early as 1768, the number of vessels had increased to 125, and at the breaking out of the revolution, they exceeded 150. Every person engaged in these voyages, had a share in the property of the vessel; and while she was at sea, the owners at home were busily employed in the manufacture of casks, iron-work, cordage, blocks, &c., for the next voyage. Thus, all the profits of the labor were widely distributed, and the voyages were rendered advantageous, even when the oil obtained was barely sufficient to pay the outfits, estimating the labor as a part. This mode of conducting the business was universal, and has continued to a considerable extent down to the present day.

The revolutionary war put an entire stop to the Nantucket whale fishery; but with the return of peace, it again revived. In 1791, the first Nantucket whaler ventured into the Pacific Ocean. Some suc-

cessful cruises had been made on the western coast of South America, by British ships, which encouraged the people of Nantucket to extend their fishery to that quarter. The vessels first sent out, returned loaded with oil, and reported that whales were plenty, the seas favorable for fishing, and the climate of those regions healthy. This was sufficient encouragement, notwithstanding the length of the voyage; and the South Sea was soon frequented by a considerable fleet of American whalers. The Spaniards threatened hostilities against them for invading their seas, and actually detained some of the ships, which put into their harbors; but these difficulties were soon removed, and the South Sea whale fishery was pursued without molestation.

The business again suffered an interruption by the war of 1812; but it was re-commenced with new spirit after the treaty of Ghent. Before this period, the people of New Bedford had also engaged in it, and subsequently, it extended to New London, Long Island, and several other places.

The following adventure with a spermaceti whale, is related by Mr. Beale. "On the morning of the 18th of June, 1832, while we were fishing off Japan, we fell in with an immense sperm whale, which happened to be just the sort we required to complete our cargo. Three boats were immediately lowered to give him chase, but the whale from some cause or other, appeared wild in its actions, long before it had seen any of our boats, although it might have been chased the day before, by some other ship. It was greatly different in its actions from most other

large whales, because it never went steadily upon one course. If he 'peaked his flukes,' or went down going to the southward, we expected he would continue that course under water, but when he again rose, perhaps he was two or three miles away from the boats to the northward. In this manner he dodged us about till near 4 P. M., at which time the men were dreadfully exhausted from their exertions in the chase, which had been conducted under a broiling sun, with the thermometer standing in the shade at 93°. About half past four, however, Captain Swain contrived by the most subtle management, and great physical exertions, to get near the monster, when he immediately struck him with the harpoon with his own hands, and before he had time to recover from the blow, he managed with his usual dexterity, to give him two fatal wounds with the lance, which caused the blood to flow from the blow-holes in abundance. The whale after the last lance, immediately descended below the surface, and the captain felt certain that he was going to 'sound,' but in this he was much mistaken, for a few minutes after his descent, he again rose to the surface with great velocity, and striking the boat with the front part of his head, threw it high into the air, with the men and everything contained therein, fracturing it to atoms, and scattering its crew widely about.

"While the men were endeavoring to save themselves from drowning, by clinging to the oars and pieces of the wreck of the boat, the enormous animal was seen swimming round and round them, appearing as if meditating an attack with his flukes, which if he had thought proper to do in return for the grievous

wounds that he had himself received, a few strokes of his ponderous tail would soon have destroyed his enemies; but this was not attempted. They had now nothing to hope for but the arrival of the other boats to relieve them from their dangerous situation, rendered more so by the appearance of several large sharks attracted by the blood which flowed from the whale, which were sometimes only a few feet from them, and also by the inability of one of the boat's crew to swim, by which three or four of his mates were much exhausted in their efforts to save him. This they succeeded in doing, after having lashed two or three oars across the stern of the boat, which happened to be not much fractured, upon which they placed their helpless fellow-adventurer. After they had remained in the water about three quarters of an hour, assisting themselves by clinging to pieces of the wreck, one of the other boats arrived and took them in. But although these brave men had been so defeated, they were not subdued. The moment they entered the boat, their immediate determination was for another attack upon the immense creature which remained close by, while the other boat which was pulling towards them, with all the strength of its rowers, would still be a quarter of an hour before it could arrive.

“Captain Swain with twelve men in one boat, therefore, made another attack upon the whale with the lance, which caused it to throw up blood from the blow-holes in increased quantities. We who were on board the ship and had observed from a great distance by means of the telescope, the whole of the occur-

rence, were employed in beating the ship towards them; but they were far to windward, and the wind being rather light, we had even our royal-sails set. Soon after the arrival of the third boat, the whale went into its flurry, and soon died; when to the dismay of the boat's crew, it sunk, and never rose again; an occurrence which is not very unfrequent, owing, of course, to the greater specific gravity of the individual. Such were the adventures of that day, in the evening of which the crews returned to the ship, worn out and dispirited, having lost a favorite boat, with the whole of her instruments, besides the last whale wanted to complete the cargo, and worth at least, 2500 dollars."

Numerous stories are told of fighting whales, many of which are probably much exaggerated. A large whale called Timor Jack, is the hero of many strange tales, such as of his destroying every boat which was sent out against him, until a contrivance was hit upon by lashing a barrel to the harpoon, by which he was struck, and whilst his attention was divided among several boats, means were found to give him his death wound. In the year 1804, the ship Adonis being in company with several others, struck a large whale off the coast of New Zealand, which stove and destroyed nine boats before breakfast, and the chase consequently was given up. After destroying boats belonging to many ships, this whale was at last captured, and the numerous harpoons of the various boats that had from time to time been sent out against him, were found sticking in his body. This

whale was called New Zealand Tom, and the tradition is carefully preserved by the whalers.

The following account of the attack of a whale upon a ship, is perfectly well authenticated. The ship *Essex*, Captain George Pollard, sailed from Nantucket, on the 12th of August, 1819, on a whaling voyage to the Pacific Ocean. On the 20th of November, whales were discovered. In pursuing them, the mate's boat was stove, which obliged him to return to the ship, when they commenced repairing the damage. The captain and the second mate were left with their boats pursuing the whale. During this interval, the mate discovered a large spermaceti whale near the ship, but not suspecting any danger, it gave the crew no alarm, till they saw the whale coming with full speed towards them. In a moment, they were astonished by a tremendous crash. The whale had struck the ship a little forward of the fore-chains. It was some minutes before the crew could recover from their astonishment so far as to examine whether any damage had been sustained. They tried their pumps and found that the ship was sinking; a signal was immediately made for the boats. The whale was now seen again making toward the vessel. He came on with great velocity, causing the water to foam all around him, and struck the ship a second blow, which nearly stove in her bows.

There was now no hope of saving the ship, and the only resort was to leave her in all possible expedition. They hastily collected a few things, threw themselves into the boat, and shoved off. The ship immediately fell upon one side, and sunk to the water's edge.

When the two other boats joined them, such was the consternation that for some time not a word was spoken by any one. The danger of their situation at length aroused the men as from a terrific dream to a no less terrific reality. They remained by the wreck two or three days, in which time they cut away the masts, which caused her to right a little. By cutting holes in the deck they obtained bread, water, and some other articles. They then left the ship with as gloomy a prospect before them as can well be imagined. The nearest land was about a thousand miles to windward of them: their boats were leaky, and their supply of bread and water short for so long a voyage. They steered southerly by the wind, in hopes of falling in with some ship, but in this they were disappointed.

After being in their boats twenty-eight days, suffering much from gales of wind, want of water, &c., they reached Dacre's Island, where they found water, but little food. Three of the crew chose to stay here and take their chance of the arrival of a ship. The others left the place and steered for Easter Island, but missed it by falling to leeward. They then directed their course to Juan Fernandez, which lay about 2000 miles to the E. S. E. One of them died on the 10th of January, and on the 12th, the mate's boat separated from the other two; and on the 19th, these likewise separated.

One of the boats was never afterwards heard of. The other two were taken up by ships after the most dreadful sufferings, of such of the crew as survived, who were only five. The men on the island were fortunately taken off.

Notwithstanding occasional accidents, however, which have led some persons to imagine that the whale fishery is a most perilous pursuit, involving the sacrifice of much property, and the destruction of many lives, yet such have been the personal courage, firmness, skill and nautical experience brought into action in this branch of American commerce, that the losses of the past year, 1844, have not exceeded one half of one per cent. upon the amount of navigation comprised in the business.

The following are the Statistics of the American whale fishery for 1844:

NUMBER OF VESSELS EMPLOYED.

Ships,	504
Barques,	140
Brigs,	33
Schooners,	19
Total,	696

PRODUCTS.

Sperm Oil,	138,595 barrels.
Black or Whale Oil,	267,082 "
Whalebone,	3,015,145 pounds.

It is stated that the French have but twelve or fifteen ships now engaged in this branch of enterprise. The whale ships of Great Britain, amounted in 1839, to about 150, and the quantity of oil obtained, was about 16,885 tons. It is generally believed that the whale fishery throughout the world is on the decline, owing in part to the diminution of the whales, and partly from the substitution of other articles for whale oil.

It is a curious fact that the swine of our western states, are now supplying great quantities of lard oil, and are thus coming into competition with the great monsters of the deep.

There is no human pursuit, which more strikingly exhibits the enterprising character of man, than this of the whale fishery. The first idea of attacking and capturing an animal many thousand times his weight and strength, and in his own element, must have been deemed even more extravagant than the fabled exploits of Hercules or Theseus. The actual privations and dangers of the whaleman, would appal the heart of most landsmen, could they see them assembled in a single picture. Many of these adventurers leave their families for one, two, and even three years. During this period, they are alone upon the briny desert; and while separated from the charities of home, they are often contending with the tempest and the wave, or engaged in deadly encounter with the great leviathan of the deep. It is probable that few persons living upon the land, have any adequate practical conception of the wild adventures, the imminent peril, and the stern hardships, experienced by the whalemen during every voyage.

But if the dangers and privations of the whale fishery are great, its beneficent results are an adequate compensation. It is impossible to compass in a single view, the blessings bestowed upon mankind by this branch of enterprise. There is no member of society who is not indebted to this source for many of his enjoyments. Let the ladies consider that the perfection of their stays, is derived from whalebone, and let him who

carries an umbrella, make a similar reflection. Let the traveller who glides along twelve miles an hour in a steamboat, or twenty-five in a locomotive, consider that he is under obligation to the whaler for the oil, which thus smooths his way and expedites his journey. Let the man who buys cotton for a shirt at ten cents a yard, thank the whaler, for it was whale oil that lubricated the machinery which produced it. Let every human being that wears cloth, or consumes any other article produced by machinery, acknowledge the obligation he owes to the daring perseverance of the whaler, for these are all, in some degree, the result of his toil and his enterprise. Let even the dainty readers of books, consider that by the light which is the product of the whalemens skill, its pages are, perhaps, composed; and let every family circle, happy and cheerful in the blaze of the astral lamp, remember that they, too, owe their enjoyment, in part, to these adventurous men of the harpoon. Let even the members of the brilliant evening party remember, that the light which gleams from ranges of spermaceti tapers, and bestows on beauty more bewitching charms, is the fruit of the seaman's danger and the seaman's privation. Alas, how "little do one part of the world consider in what manner the rest live!" While the dance and song enthral the gay circle of the saloon—how far are the joyous throng from reflecting that thousands of their fellow-beings are upon the treacherous wave, toiling and suffering, to provide a luxurious light to shine upon their pleasures!

THE SEAL FISHERY.

THE seal belongs to the class of animals called by naturalists *Amphibia*, and is of the same genus as the walrus, manatus, sea lion, sea cow, &c. It resembles at once a fish and quadruped. Its head is round, and its eye full and sparkling, giving its countenance a human like expression. It has four feet, but they are stuck on like fins and are covered with a membrane, so as to make it look like a child with a shirt on, covering the hands and feet. It swims with great dexterity, but moves awkwardly on land. The seal gives a large quantity of oil, which is similar to fish oil; but its skin is the chief object of pursuit. It has a coat of fine compact fur, covered by coarse glossy hair. To the Esquimaux, the seal is the great source of life and comfort; in civilized countries, its skin is used for caps, gloves, collar and cuffs of coats, and a variety of other uses.

This animal is found on all the Arctic coasts, and also on some of the Antarctic islands. Great numbers have formerly been killed on the Falkland and South Shetland Islands, and several vessels from New England were formerly engaged in catching them there. The great resort of them, at present, is in the seas adjacent to the northern coasts of North America, and in the region of Spitzbergen. They are gregarious, and fond of collecting upon the ice; on the masses which drift southward in March and April, from the Arctic seas, thousands of them journey from these colder to somewhat warmer latitudes. These migrat-

ing herds are the great resource of the Newfoundland seal fishers.

Those who are acquainted with the terrific grandeur of the lofty islands and mountains of ice, covering often from two to three hundred miles of the ocean, and occasionally arrested by the coasts or shoals in this quarter, will have some adequate idea of the dangers of such a pursuit. From three to four hundred vessels of 60 to 120 tons, are sent out from the different ports of Newfoundland and Nova Scotia, to carry on the seal fishery. They are prepared for sea with necessary stores and fire-arms, poles to defend themselves from the ice, &c., before the feast of St. Patrick, which occurs on the seventeenth of March. Immediately after, the crews at the harbors then frozen over, collect together, with assistance from the shoremen, and dividing into two rows on the ice, mark out a channel wide enough for their largest vessels to pass. Then with axes and large saws, each party cuts along its line and divides the solid mass of ice into squares, which are shoved underneath at the sides by long poles. By this laborious operation a channel is opened and the vessels pass out.

On getting to sea, the fishermen find themselves surrounded by drift ice; but they push their way through the openings, until they meet with the herds of seal that accompany the frozen masses, which at this season, drift southward from the polar seas. These are called "*seal meadows.*" The animals are surprised while sleeping on the ice, and shot with muskets, or knocked down with clubs. The old ones sometimes turn upon their assailants and make resist-

ance. The hooded-seals will draw their hoods, which are bullet-proof, over their heads. The skins, with the fat surrounding the bodies, are stripped off together, and the scalped carcasses left on the ice. The pelts, or scalps, are carried to the vessel, and packed closely in the hold; but the weather is often such as to leave no time to scalp the seals on the ice, and they are then carried whole to the vessel. The situation of the seal-hunters during the storms of snow and sleet, which are unavoidable at that season, is most hazardous. Many vessels have been crushed in pieces by masses of ice closing on them, and their crews have perished.

The fat, or seal-blubber, is separated from the skins, cut in pieces, and put into frame-work nets, through which and small boughs inside, the oil oozes on being exposed to the heat of the sun. In three or four weeks, it runs rapidly off, and becomes the seal oil of commerce. Seals are also caught at Newfoundland and Labrador, by strong nets set across such narrow channels as they are in the habit of passing through.

The seal fishery is extensively pursued in the Arctic regions. The best situation is in the neighborhood of Jan Mayen's Island; and the most favorable season is March and April. When the boats from the seal ships arrive on the ice, the men attack the animals with clubs, and stun them, by a single blow over the nose; by this means, one person is able to capture a large number of seals. When they are seen on pieces of drift ice, they are hunted in boats, each boat pursuing a different herd. Should the seals attempt to

leave the ice before the arrival of the boat, the men shout as loud as possible, and produce such amazement among them by this uproar, as to delay their flight till the boat arrives, and the work of destruction is begun. When the seals are very numerous, the sealers stop not to flay those they have killed, but set off to another ice-field to attack others, leaving merely one man behind, to take off the skins and fat. When the condition of the ice forbids the use of boats, the hunter is obliged to pursue the seals over it, jumping from fragment to fragment, till the prey is overtaken.

Whale ships have sometimes accidentally fallen in with herds of seals, and secured two or three thousand of them. The business is pursued even to the borders of the Spitzbergen ice, but it is very hazardous, and many ships with all their crews have been destroyed by the sudden storms which spring up in that dangerous neighborhood.

The Esquimaux hunt the seal in various ways, according to circumstances. This animal is peculiarly vigilant, and whenever a herd of them visit the shore, some are always on the lookout; and a seal when alone, is observed very frequently to raise its head for the purpose of discovering the approach of enemies. Should they be on a large field of ice, they are always careful to secure a retreat by lying near the edge of it, or keeping a hole in the ice always open before them. In the high northern latitudes during winter, the seal is found many miles from any open water, and he makes a circular hole through the ice, even where it is several feet thick. This opening is continually kept clear, and allows the entrance of the

animal's body, the top being permitted partially to freeze over. These breathing-places bear a considerable resemblance to mole-hills, and have a small crack through their upper part.

When this breathing-place is discovered by the Esquimaux, he raises near it a small wall about four feet high, of slabs of snow, to shelter himself from the wind, and sits under the lee of it, having deposited his spear, lines, and other implements, upon several little forked sticks set up in the snow, in order to avoid making the slightest noise in moving them when they are wanted. The most curious precaution taken with a similar design, is that of tying his own knees together with a thong, to prevent any rustling of his dress, which would alarm his vigilant prey. In this situation, the Esquimaux will frequently sit for many hours, when the thermometer is below zero, attentively listening to ascertain whether the animal is working below. When he thinks the hole is almost completed, he carefully raises his spear, to which the line is previously tied, and the moment the breathing of the seal is distinctly heard, the ice being then, of course, very thin, he strikes the spear into him with both hands, and cuts away the ice with his knife to repeat the blow. At other times, having enlarged the breathing-place, the hunter takes his position behind the shelter, and the animal, when he next comes to the hole, rises fearlessly out of the water, exposing his head and shoulders, and repeats this action with increased confidence. As he is not in haste to dive again, the hunter now starts up suddenly, and drives his spear forcibly into him. Another method consists

in covering the breathing-hole with light snow, and making an opening through the top of it with the spear-handle, about as large as the mouth of a bottle. The hunter then withdraws his spear and takes his place behind the snow-screen, listening carefully till he hears the seal breathing through the snow, when he silently rises and plunges his weapon through the covering into the body of the animal.

When a company of seals are seen on the edge of the ice, next to the open sea, the hunters dispose themselves in single file, so as to conceal their number and appear as few as possible, when viewed from the point towards which they are moving. In this manner, they creep cautiously towards the edge of the ice. When nearly close enough to throw the spear, they all crouch low, and remain in this position for a quarter of an hour, during which time, they get all their implements ready for immediate service. Then, when the seals are intercepted from view, they creep forward, gaining a few paces at a time, until they approach close enough to throw the spear, which is done suddenly, and with full force. This mode of hunting is occasionally attended by fatal consequences to the Esquimaux, especially if the ice be of recent formation, as large cakes are detached at times, by the force of the tide, and swept out to sea, without allowing the slightest opportunity for escape.

The extent of the seal fishery is matter of surprise to those who have not investigated the subject. A single vessel will sometimes secure five thousand skins, and more than a hundred tons of oil, in one season. In 1829, 280,613 seals were taken by the

Newfoundland fishermen. In 1830, 553,435 ; in 1831, 748,735 ; making 1,582,783 animals, caught in three years ! The value of the undressed skins in London, is about twenty-two to thirty-five cents, each ; the oil is there worth from \$110, to \$120, per tun.

We are little apt to consider the romance which is involved in the history of many of our commonest comforts. The boy with his seal skin cap is content to feel its warmth in the bitter breath of winter, without reflecting upon the tale that cap could tell, if it were gifted with speech. Its original owner was born and nursed upon an Arctic shore, where winter holds an almost eternal dominion. There, amid fields of ice, and in daily familiarity with the whale, the walrus, and the white bear, it pursued its joyous and sportive career. Diving in the depths of the sea, or migrating on floating fields of ice, it seemed forever happy in companionship with its fellows, and gave even to the ghastly scenes of the Arctic world, an aspect of cheerfulness. At length it was slain by the spear of the Esquimaux, or the club of the sealer ; the skin was stripped off, and transported to Europe. Having undergone a process of dressing, it crossed the Atlantic, passed under the hammer of the auctioneer, reached the shop of the furrier, and after due conformation from the sheers and needle, arrived at its ultimate destination on the school boy's pate !

THE COD FISHERY.

THE cod belongs to the migrating fishes, and is found only in northern seas. Its food consists of small fish, worms, crabs and other crustacea. It is very voracious, and has been known to weigh seventy-five pounds. It is found along the New England coasts, but its chief place of resort is the banks of Newfoundland. These seem to be the top of a sea mountain, five hundred miles in length, and surrounded by a deep sea. Hither, in early spring, the cod annually repair in countless numbers, to feed on the worms which are found on the banks, and here the fishermen pursue them.

The Newfoundland cod fishery commences early in June. The "bankers," or vessels fishing on the banks, usually anchor where they find plenty of cod, which they catch with hook and line. The fish are salted in bulk in the vessel's hold, till the cargo is completed. The fish caught on the banks, are larger than those taken by the boats employed in the shore fishery, but they do not look so well when cured, owing to their lying so long in salt before drying. They are, however, preferred in some markets, on account of their size.

The boats which the Newfoundlanders use for the shore fishery are of different sizes, some requiring only two hands, while others have four, which is the general number. It is not uncommon to see boys and girls, when the cod are plentiful, fishing in these boats. Every fisher is provided with two lines, each having two hooks. Both lines are thrown out at the

same time, one on each side of the boat, to which one man attends. They use such kind of bait as happens to be in season, as herring, mackerel, caplins, squids, clams, &c., and when none of these are to be had, the flesh of birds. Many fish are also taken by the *jigger*; this is a piece of lead made into the form of a small fish, with two hooks fixed into its mouth, and turned outward, in opposite directions. It is made fast to a line which is thrown over into the sea, and by jerking it up and down, the hooks fasten into such fish as they happen to strike. The cod, which is one of the least dainty of the finny tribes, also darts at and swallows the artificial fish with the hooks fastened to it. Vast quantities of cod are also caught with seines.

When the boats are stationed on the fishing-ground, which is sometimes within the harbors, and in the early season near the shore, the men sit or stand at equal distances from the gunwales, and each attends to his own lines. So abundant are the fish at times, that a couple of cod are hooked on each line before the lead reaches the bottom; and while one line is running out, the fisherman has only to turn round and pull in the other with a fish on each hook. In this way they fill the boat in a very short time. They then proceed to the stage on shore with the fish, when the operations of splitting and salting succeed. Fish should be brought on shore within forty-eight hours after being caught; but when plentiful, the boats often return in two or three hours, and push away again, immediately after the fish is thrown on the stage. This is a building erected on posts jutting out into the

sea far enough to allow the boats to come close to its end. On the same platform stands the salt-house, in which there are tables with strong wooden stools for four important personages, called, cut-throat, header, splitter and salter.

The fish is thrown with a kind of pike upon the stage, and carried generally by boys or women to the long table. The business of the cut-throat, as his name implies, is to cut the throat of the fish to the bone, and rip open its bowels; he then passes it quickly to the header, who, with a sudden wrench, pulls off the head and tears out the entrails, passing the fish instantaneously to the splitter, and at the same moment separating the liver and precipitating the head and entrails through a hole in the platform into the sea under the stage floor. The splitter, with one cut, lays the fish open from head to tail, and almost in the twinkling of an eye, with another cut, takes out the sound-bone, which, if the sounds are not to be preserved, he lets fall through a hole into the sea, throwing the fish at the same moment into a barrow. Such is the surprizing quickness of the operation of heading and splitting, that it is not unusual to despatch six fish in a minute. The process is essentially the same on board the American banker fishers; the superfluous parts of the fish are tossed overboard, and it is said that expert operators will keep a cod's head perpetually in the air.

The business of the salter is most important, as the value of the whole cargo depends on his care and judgment. Some fish are dry-salted, and others cured in vats with pickle; these require less salt and

surpass the others in weight; but they do not look so well, nor sell for so high a price. After salting, the fish are dried by spreading them in "flakes" on stagings, composed of small sticks, raised a few feet above the ground. The Newfoundlanders sometimes raise them twenty feet high, as the air aloft is believed to be purer. The fish are spread out in the morning, with the fleshy side uppermost, and turned about noon or oftener, if the weather be hot. In the evening, they are gathered into small heaps, which are increased in size as the fish dry, from four or five to twenty or more. When nearly cured, they are made into large circular piles, much in the form of a haystack, with the skin uppermost. These piles are thatched with the rinds of spruce fir, or with tarpaulins or circular wooden frames, which are pressed down with heavy stones. After remaining some time in these piles to "sweat," they are spread out again to complete the drying, and then removed into the warm houses. As the least rain will spoil the fish, nothing can exceed the hurry of men, women, and children, on the shores of Newfoundland, when showers are approaching; they abandon every other occupation, and even run out of the church on Sunday, to pile up the fish.

The quality of the fish is effected by the least inattention or error in curing. If the weather is hot and calm, it is affected with fly-blows, and becomes maggoty; a few fish of this description may contaminate a whole cargo. If too much salt is used, the fibres break in drying, and the fish easily falls to pieces; in this state it is called "salt-burnt," and is unfit for market. When too long exposed to the sun, without

turning, it is affected much in the same manner, and is then called "sun-burnt." In damp weather, putrefaction is apt to commence, and then it becomes slimy; and when piled in this state it sometimes takes a brownish color, and is called dunfish, which although excellent for immediate use, is not fit for shipping. Previous to exportation, the fish are again spread out to dry, when they are culled or sorted into four qualities.

The sounds are generally taken from the bones, and the tongues are cut out of the head by women, children and old men. They are pickled in kegs. The livers of cod are put into vats or barrels and exposed to the sun, by the heat of which they are melted into oil.

The greater part of the cod fishery is carried on by the Americans, from the New England States. By a treaty with Great Britain, vessels of this country are allowed to fish all along the coast of British America, and to cure fish in such harbors and bays as are uninhabited, or if inhabited, with the consent of the people. The active and industrious New Englanders, ever fertile in expedients, and always alert in the pursuit of gain, know well how to take advantage of so important a concession. They frequently occupy the whole of the Newfoundland and Labrador fishing-ground, to the exclusion of the British. No other people prosecute the fishery with such assiduity and profit. There are two modes which they follow in fitting out for this business. The one is when six or seven farmers or their sons, combine to build a schooner during winter, which they man themselves,

as all the New Englanders of the small towns on the seacoast are more or less seamen, as well as farmers. After fitting the vessel with necessary stores, they proceed to the banks, the Gulf of St. Lawrence or Labrador, and loading their vessel with fish, make a voyage between spring and the time for getting in their crops. The proceeds they divide after paying for outfit. They remain at home to assist in gathering the harvest, and proceed again for another cargo which is salted down and not afterwards dried; this is termed mud-fish, and kept for home consumption.

The other method is this; a merchant or other person owning a vessel, lets her to ten or fifteen men on shares. He finds the vessel and nets; the men pay for the provisions, hooks and lines, and for the salt necessary to cure their proportion of fish. One of the number officiates as master, but he is compelled to catch fish as well as the others, and receives but trifling wages. The crew have commonly five eighths of the fish taken, and the owner three eighths. The first spring voyage is made to the banks; the second either to the banks, the Gulf of St. Lawrence, or Labrador; the third to the banks, and sometimes a fourth to the same place.

The produce of the cod fisheries throughout the world, is immense, as will be seen by the following statement.

In the French cod fishery, in 1831, there were engaged 302 ships, employing 6,243 men, and yielding 12,817,943 killograms of dried fish, and 1,163,229 killograms of oil.

The exports of the British cod fishery, carried on by

boats from the coasts of Newfoundland and Nova Scotia, produced in 1832, with the seal and salmon fishery, about \$860,000. Besides this, the fisheries along the Labrador coast are extensive.

The American cod fishery, in 1833, employed vessels of 60,977 tons; their exports of fish, alone, amounted to over a million of dollars.

It is impossible to tell the actual number of these fish annually taken, but it amounts to many millions, and constitutes a material article of food throughout Christendom. The dried cod are dispersed all over Europe, and find their way by means of railroads, steamboats and canals, to the settlements along the great lakes and the waters of the upper Mississippi.

Whoever in crossing the Atlantic, has chanced to come across some of the vessels of the cod fishers on the "Banks"—and remarked the dreariness of the scene, amid those chill regions of fog and tempest, cannot but have experienced emotions similar to those expressed by the poet.

"A perilous life and sad as life can be,
Hath the lone fisher on the lonely sea,
In the wild waters laboring far from home,
For some bleak pittance e'er compelled to roam!
Few friends to cheer him in his dangerous life,
And none to aid him in his stormy strife;
Companion of the sea and silent air,
The lonely fisher thus must ever fare;
Without the comfort—hope, with scarce a friend,
He looks through life, and only sees—its end.

Eternal ocean! old majestic sea!
Ever love I from shore to look on thee,
And sometimes on thy billowy back to ride,

And sometimes o'er thy summer breast to glide ;
But let me live on land—where rivers run,
Where shady trees may screen me from the sun ;
Where I may feel, secure, the fragrant air ;
Where, whate'er toil or wearying pains I bear,
Those eyes, which look away all human ill,
May shed on me their still, sweet, constant light,
And the little hearts I love, may day and night
Be found beside me, safe and clustering still.

THE HERRING FISHERY.

HERRINGS are perhaps the most abundant of all the finny tribes. They are found in the highest northern latitudes yet visited by man, and as far south as the coast of France in Europe, and Carolina in America. They are met with in the seas of Kamtschatka, and probably they reach the isles of Japan. Their great winter rendezvous is within the arctic circle. There they continue many months in order to recruit themselves after the fatigue of spawning. The seas within that space, swarm with insect food in a far greater degree than those of warmer latitudes ; the mighty army of herrings begin to put themselves in motion in spring. They appear first off the Shetland Islands in April and May ; but these are only the forerunners of the grand shoal which comes in June, and their appearance is marked by certain signs, such as numbers of sea-fowl which bear them company, being thus sure of a perpetual feast. When the main body advances, its breadth and depth are such as to alter the appearance of the very ocean. It is divided into distinct columns

of five or six miles in length, and three or four in breadth, and their motion causes a strong rippling in the water. Sometimes they sink for the space of ten or fifteen minutes, and then rise again to the surface. In fine weather they reflect a variety of splendid colors like a field of the most precious gems.

The first check which this great army meets in its march southward, is from the Shetland group of islands, which divides it into two parts. One wing takes to the east and the other to the western shores of Great Britain, filling every bay and creek with their numbers. The former proceed toward Yarmouth, the great and ancient mart of herrings; they then pass through the British channel, and for the most part disappear. Those which steer toward the west after coasting the Hebrides, where there is a great stationary fishery, proceed to the north of Ireland, where they meet with a second interruption, and are obliged to make another division. The one portion deviates to the western side, and is scarcely perceived, being soon lost in the broad Atlantic; but the other half that passes into the Irish sea, is welcomed by the inhabitants of the coasts, who feed upon its countless multitudes. These brigades as we may call them, which are thus separated from the greater columns, are often capricious in their motions, and do not show an inviolable attachment to their common haunts.

This instinct of migration was given to the herrings that they might deposit their spawn in warmer seas, which mature and vivify it more effectually than those of the frozen zone. It is not from a deficiency of food that they leave the regions of the north; for they

come to us very fat, and on their return are generally observed to be lean. They are full of roe toward the end of June, and continue in perfection till the beginning of winter when they deposit their spawn.

The herring appears to have been unknown to the ancients, being rarely, if ever, found in the Mediterranean. The Dutch are said to have engaged in the fishery in 1164. The invention of pickling or salting herrings is ascribed to one Berukels of Biervliet near Sluys, who died in 1397. The emperor Charles V. visited his grave, and ordered a magnificent tomb to be erected to his memory. Since this early period, the Dutch have uniformly maintained their ascendancy in the herring fishery; but owing to the Reformation, and the lax observance of Lent in Catholic countries, the demand for herrings upon the continent is now far less than it was in the fourteenth and fifteenth centuries.

The herring fishery of the British Islands is practised by drift-nets, and principally at night, as the fish strike the nets in much greater numbers during the darkness. It is supposed that in the daytime, the nets scare the fish, and drive them away from the grounds. Fishing with these by day is strictly prohibited. The darkest nights and those in which the surface of the water is ruffled by a breeze, are considered the most favorable. The food of the herring consists principally of the various kinds of crustacea, but they have been known to devour the fry of their own species. About 400,000 barrels of herring are annually taken and cured in Great Britain.

In the United States, particularly on the New England coast, the herring are also taken in great num-

bers. During the season of spawning, the rivers, both large and small, abound with them. In Passamaquoddy Bay and the neighborhood, they are taken by scooping them up with hand-nets. This fishing, as in England, is mostly carried on during dark nights, and often displays the most striking and picturesque appearance to the spectator on shore. The fishermen go in small light boats, each carrying a flaming torch. The boats row with great swiftness through the water, and the herring, attracted by the glare of the light, crowd after the boat in such numbers, that those stationed in the stern for this purpose, scoop them up by thousands. The fish frequently throng together with such eagerness, as to throw one another out of the water. When there are large numbers of boats together upon the water, with the strong red glare of their birchen torches reflected from the surface, the lights swiftly crossing and re-crossing each other, now suddenly disappearing and again appearing among the islands as if by enchantment, the whole contrasted with the darkness that shrouds every other object, produce a scene of the most novel and romantic character.

It is impossible to give any authentic statement of the number and amount of herrings taken; but in Great Britain alone, 439,371 barrels were inspected and branded by the government, during the year 1831. It is probable that this was less than half the whole number caught in Europe and America. If we suppose that a million of barrels are annually taken, and that each barrel contains 500, we shall see that the consumption of this fish in Europe and America, is 500 millions a year !

THE MACKEREL FISHERY.

THE Mackerel are a migratory fish like the herring, and are caught in considerable numbers, both in Europe and America. They appear on the coast of New England early in the summer, and pass to the south. Those caught early in the season are lean and indifferent eating, but before they leave our coast, they become fat, and afford a choice dish for the table. Besides a supply for daily consumption in the markets of the seaport towns, vast numbers are taken for curing and exportation. The mackerel fishery is pursued in small craft called *chebacco-boats*, of from 15 to 30 tons' burthen; the crews of which go upon shares, as in the cod fishery. The fishermen throw great quantities of bait overboard around the boats, which attract the swarms or *schools*, as they are called, of mackerel, and they are then caught with hook and line. After being pickled and brought on shore, they are sorted into three different qualities, put up in barrels and branded according to quality by a public inspector. They are exported to the West Indies, South America, and the southern and western States of the Union. 250,000 barrels are sometimes taken in a year, exclusive of those sold fresh in the markets. It is probable that the mackerel fishery may amount to nearly half that of the herring fishery.

THE PEARL FISHERY.

PEARLS were in the highest estimation among the ancient Romans, and bore an enormous price. Their

value in modern times has very much declined, partly no doubt, from changes of manners and fashions, but more, probably, from the successful imitations of pearls which are sold at a low price. A handsome necklace of Ceylon pearls smaller than a large pea, costs from 800 to 1500 dollars; a necklace of other pearls of the size of peppercorns, may be bought for 70 dollars. The pearls in the former are valued at five dollars each; those in the latter at 30 cents. Pearls of the size of small shot are called "seed pearls," and are of little value; these are mostly sent to China. One of the most remarkable pearls of which we have any authentic account, was bought by the French traveler Tavernier at Catifa in Arabia, where pearl fishery has long been famous, for the enormous sum of half a million of dollars. It is two or three inches long and about half an inch thick, and is of a regular pear-like shape, without blemish.

The pearl oyster is sought in various parts of the world, particularly on the west coast of Ceylon; at Tuticoreen on the coast of Coromandel; at the Bahrein Islands in the Gulf of Persia; at the Sooloo Islands; on the coast of Algiers; at Margarita in the West Indies, and in the Bay of Panama in the South Sea. The most extensive fisheries are those of the Persian Gulf. The entire monopoly of this is in the hands of the Sheik of Bushire, who appears to consider all the islands in the Gulf as his immediate property. The fisheries best known are those of Ceylon. The principal one is on the western coast, off the bay of Condatchy, about twelve miles south of the island of Manaar. This part of the country is sandy, and at

other times is scarcely inhabited, but when the fishery begins, a town suddenly springs up here, with numerous streets a mile long.

The banks on which the pearl oysters are found are fifteen miles out at sea. The boatmen with their attendants, to the number of 6000, are roused a little before midnight with immense bustle, and after performing their ablutions and incantations to charm away the sharks, they set sail. About half-past six in the morning the operation begins. A sort of scaffolding is projected from each side of the boat, from which the diving tackle is suspended, consisting of three stones, fifty-six pounds in weight on one side, and two on the other. The diving stone hangs by a rope and slip-knot, and just above the stone is a strong loop to receive the foot like a stirrup. A basket for the oysters is added, and when all is ready, the driver grasps his nostrils with one hand and descends. The moment he reaches the bottom he disengages his foot from the rope, which is immediately drawn up to be ready for the next diver. The one at the bottom throws himself on his face and collects everything he can lay hold of into his basket. When ready to ascend, he gives a jerk to the basket-rope, and is drawn up. Some of the divers accomplish the dip in one minute. Double that time is the utmost that any one remains under water. These persons usually bleed at the nose and ears after rising, but they seem to enjoy the occupation and regard it as a pleasant pastime, never complaining of fatigue unless the banks are poor in oysters.

Pearl shells, commonly called *mother of pearl shells*,

are imported from various parts of the East, and consist principally of the shells of the pearl oyster from the gulf of Persia and other places, particularly the Sooloo Islands, situated between Borneo and the Philippines, the shores of which afford the largest and finest shells hitherto discovered. On the inside the shell is beautifully polished, and of the whiteness and water of pearl itself; it has the same lustre on the outside, after the external laminæ have been removed. Mother of pearl shells are extensively used in the arts, particularly in inlaid work, and in the manufacture of handles for knives, buttons, toys, snuff boxes, &c. The Chinese manufacture them into beads, fish counters, spoons, &c., giving them a finish to which European artists have not been able to attain.

THE CORAL FISHERY.



THE Coral of commerce is a marine production, of which there are many varieties. It was well known

to the ancients, but it was reserved to the moderns to discover its real nature. It is, in fact, the nidus or nest of a certain species of vermes which has the same relation to coral that a snail has to its shell. As an ornament, black coral is most esteemed, but the red is also very highly prized.

Coral is found in very great abundance in the Red Sea, the Persian Gulf, in various places in the Mediterranean, on the coast of Sumatra, &c. It grows on rocks and many solid submarine bodies; and it is necessary to its production, that it should remain fixed to its place. It has, generally, a shrub-like appearance. In the Straits of Messina, where a great deal is fished up, it usually grows to nearly a foot in length, and its thickness is about that of the little finger. It requires eight or ten years to attain its greatest size.

The depth at which it is obtained is various—from 10 to 100 fathoms or more; but it seems to be necessary to its production, that the rays of the sun should readily penetrate to the place of its habitation. Its value depends upon its size, solidity, and the depth and brilliancy of its color; and is so very various, that while some of the Sicilian coral sells for eight or ten guineas an ounce, other descriptions of it will not fetch one shilling a pound. It is highly prized by the opulent natives of India, as well as by the fair sex throughout Europe. The inferior or worm-eaten coral is used in some parts of the Madras coast, in the celebration of funeral rites. It is used also medicinally. Besides the fishery in the Straits of Messina already alluded to, there are valuable fisheries on the coasts of Majorca and Minorca, and on the coasts of Provence.

A good deal of Mediterranean coral is exported to India, which, however, draws the largest portion of its supplies from the Persian Gulf. The produce of the fishery at Messina is stated by Spallanzani, to amount to 12 quintals of 250 pounds each.

The manner of fishing coral is nearly the same every where. That which is most commonly practised in the Mediterranean is as follows:—Seven or eight men go in a boat, commanded by the proprietor; the caster throws his net, if we may so call the machine which is to tear up the coral from the bottom of the sea; and the rest work the boat, and help to draw in the net. This is composed of two beams of wood tied crosswise, with lead fixed to them to sink them; to these beams is fastened a quantity of hemp, twisted loosely round and intermingled with some loose nettles. In this condition the machine is let down into the sea, and when the coral is pretty strongly entwined in the hemp and nets, they draw it up with a rope, which they unwind according to the depth, and which it sometimes requires half a dozen boats to draw. If this rope happens to break, the fishermen run the hazard of being lost. Before the fishers go to sea, they agree for the price of the coral; and the produce of the fishery is divided at the end of the season, into thirteen parts; of which the proprietor has four, the caster two, and the other six men one each; the thirteenth belongs to the company, for boat-hire, &c.



GENERAL REMARKS ON THE FISHERIES.

IN the preceding sketches, we have only noticed those fisheries which make a prominent figure in commerce.* We have said nothing of those which have for their object the supply of the table with fresh salmon, shad, trout, turbot, sole, perch, alewives, smelt, white bait, carp, pout, eels, lobsters, clams, oysters, crabs, prawns, shrimps, and multitudes of others. Fishing not only constitutes one of the great branches of human industry and enterprise, but it supplies a large portion of the food of the entire human race. Along the sea coasts, which are the most thickly settled part of the world ; on the banks of rivers, and the borders of lakes, the inhabitants of every zone look to the waters for a considerable portion of their subsistence. Of course, we have no means of making reliable estimates as to the consumption of the whole world, but we suppose that if we include all species, and the smaller kinds, it can hardly be less than an annual average of fifty to each person ; and if we estimate the population of the globe at 800,000,000, we shall have an aggregate of 40 thousand million fishes, devoured every year by mankind !

* The number of oysters consumed in Great Britain is probably not less than 50,000,000, annually. Salmon fisheries, says Marshall, rank next to agriculture, as a means of supplying food. The value of the salmon, caught in Scotland alone, is \$750,000 a year. Our own shad fisheries are immense. The exports of cured fish from the United States are valued at about \$750,000 a year.

HUNTING.

CATTLE HUNTING.

THE Pampas of South America are vast plains extending from the banks of the La Plata to Chili; their northern boundaries are not distinctly known, but they stretch to the south as far as the rivers of Patagonia. These immense level territories like the steppes of Russia, having scarcely any elevations, exhibit a prospect resembling that of the sea, terminated only by the horizon. They are somewhat diversified with paths and clefts or ditches, which collect the rain water and which commonly end in lakes, as there is no declivity of surface to carry the streams to the sea. Yet there are wide tracts in which no water is found; and trees are extremely rare except a few small ones around the lakes. The soil is generally a black earth of little depth, lying on a bed of coarse white chalk, so that it is difficult to dig wells.

These plains exhibit a sea of waving grass, sometimes 900 miles in extent, with hardly an interruption of wood or hill. The succulent and nutritive herbage of the soil affords pasture to many of those countless herds of cattle that rove unowned and unvalued over a great portion of South America, and whose hides

and tallow form a principal article of the trade of Buenos Ayres. Wild horses also abound in these natural meadows. They wander from place to place, against the current of the winds, and are sometimes met with in such numbers that travellers across the plains are surrounded by them for weeks together. Sometimes dense troops of them sweep over the country at full speed for hours, and it is with the greatest difficulty that the traveller can avoid being run over and trampled to death.

Troops of savages are sometimes scouring these plains and occasionally attack travellers, but their attempts are only successful when made by surprise, or when a few individuals of the party straggle from the main body. The route across this country is often pursued by the compass, as there are few landmarks or traces by which the road can be discovered for many hundred miles. Travellers go in covered carts or caravans, made almost as commodious as a house, with doors to shut, and windows on each side. Mattresses are laid on the floor, on which the passengers sleep for the greater part of the journey. These vehicles are drawn by oxen, and accompanied by baggage horses and mules. They set out in the afternoon, two hours before sunset, travel all night, and till an hour after sunrise. They then rest and partake of the provisions brought with them or taken by hunting on the journey, for which purpose many travellers carry dogs and hunting horses. During the day excessive heats prevail, from which they can get no shelter except what their vehicles afford. Sometimes no water is to be met with during several days' journey, and they

often suffer for drink unless relieved by showers of rain. Travelling is sometimes impeded by violent showers which lay the whole country under water. The westerly winds, too, or *Pamperos*, which descend from the lofty Cordilleras, not meeting with anything to check their impetuosity, acquire here an inconceivable degree of fury, and are a great annoyance to the traveller.

To this general account we may add the graphic description of the Pampas furnished by Capt. Head. On leaving Buenos Ayres, the first of these regions is covered for one hundred and eighty miles with clover and thistles; the second region which extends for four hundred and fifty miles, produces long grass; and the third region which reaches the base of the Cordilleras, is a grove of low trees and shrubs. The second and third of these regions have nearly the same appearance throughout the year, for the trees and shrubs are ever-greens, and the immense plain of grass only changes its color from green to brown: but the first region varies with the four seasons of the year in a most extraordinary manner. In winter the leaves of the thistles are large and luxuriant, and the whole surface of the country has the rough appearance of a turnip field. The clover in this season is extremely rich and strong, and the sight of the wild cattle grazing in full liberty in such pasture, is very beautiful. In spring, the clover has vanished, the leaves of the thistle have extended along the ground, and the country still looks like a rough crop of turnips. In less than a month the change is most extraordinary: the whole region becomes a luxuriant wood of enormous thistles, which

have suddenly shot up to a height of ten or eleven feet, and are all in full bloom. The road or path is hemmed in on both sides: the view is completely obstructed; not an animal is to be seen, and the stems of the thistles are so close to each other and so strong, that independent of the prickles with which they are armed, they form an impenetrable barrier. The sudden growth of these plants is quite astonishing, and although it would be an unusual misfortune in military history, yet it is really possible that an invading army, unacquainted with this country, might be imprisoned by these thistles before they had time to escape from them. The summer is not over before the scene undergoes another rapid change; the thistles suddenly lose their sap and verdure, their heads droop, the leaves shrink and fade, the stems become black and dead, and they remain rattling in the breeze one against another, till the violence of the pampero or hurricane levels them with the ground, where they rapidly decompose and disappear; the clover rushes up, and the scene is again verdant.

The Spanish inhabitants who are thinly scattered over this wide region are called Gauchos: they are a wild, semi-barbarous race, with less civilization than the backwoodsmen of the United States. The Pampas Indians frequently attack the Gauchos for two objects, to steal cattle, and for the pleasure of murdering the people. In their invasions, they generally ride all night, and hide themselves on the ground during the day; or if they travel in the daytime, they crouch almost under the bellies of the horses, who by this means appear at a distance to be without riders. They

usually approach the huts of the Gauchos under cover of the night at full gallop, uttering loud shrieks and striking their mouths with the hand ; and this cry which intimidates their enemies, is continued through the whole of the assault. Their first act is to set fire to the roof of the hut, and it is dreadful to fancy what the feelings of a family must be, when, after having been alarmed by the barking of the dogs, which the Gauchos always keep in great numbers, they first hear the wild cry which announces their doom, and in an instant afterwards, find the roof burning over their heads. As soon as the family rush out, which they are compelled to do, the men and women are struck with the lances of the Indians, which are eighteen feet long ; all are instantly butchered except young and beautiful girls who are carried off into captivity.

The hunting of wild oxen on the Pampas is performed chiefly in the following manner. A number of hunters repair on horseback to the places frequented by wild cattle. Each one is provided with a long pole, the extremity of which is armed with a sharp iron blade crossing the shaft obliquely. With this weapon the hunter dexterously rips open the throat of the bullock. This method is preferred, as by piercing the body with lances or bullets, the hide would be spoiled. Another method is by using a sharp iron crescent, the points of which are about a foot across, which is fixed at the end of the pole, and with which, the hunter hamstring the beast. Both these operations are performed without checking the horse, and when the prey has fallen, the hunter leaves it to pursue another

beast, which he attacks in the same manner. After having struck a sufficient number, or fatiguing himself with the exercise, he returns and finds out the place where the animals lie, which he is careful to impress on his memory. Subsequently the animals are skinned, and the fat or suet wrapped up in the hide, to which is sometimes added the tongue; the carcass is left a prey to the wild dogs and vultures.

The immense herds of cattle which the Spaniards keep on their *estancias*, or grazing farms, are in a wild state, by reason of the extent of the pastures in which they range, and they are hunted and caught in the same manner as the cattle of the Pampas. Sometimes, however, they are driven into an enclosure to be killed. At the gate are the peasants on horseback with their crescent spears. As many beasts are then turned out as there are men in waiting, and each pursues his prey. They are immediately hamstrung, despatched, and flayed; and this exercise continues daily till all the cattle appointed for the year's slaughter, are killed. It is surprising not only to witness their dexterity in hamstringing the beasts when both are on full speed, but also to see one man go through the whole work with so much regularity and despatch—for each skins his beast, takes out the tallow, and cuts up the flesh for salting and drying. He then wraps the fat in the hide, and loading it on the horse, carries it off to the farm. If the bullock be too swift for the horse, the hunter has recourse to his noose, or *laso* and halters him by throwing it round his neck, or entangles one or two of his legs.

Another method is as follows. Two persons mount

their horses with their lasos, which are thirty or forty yards long having one end fastened to the saddle. One of the men rides in among the cattle, and selecting a beast, throws his noose round his horns and gallops away. The rope being run out, the other is ready with his noose, and swinging the rope several times round his head, he watches the opportunity when the beast is kicking and struggling, and entangles one of the hind legs. Both the horses immediately draw the rope tight, in opposite directions, and being well trained to the exercise, stand so firm that the beast cannot move. A third man now advances and hamstring, with a large knife, the hind leg that is not secured, upon which the animal immediately falls, and his throat is cut. Though this may seem to a stranger a tedious process, it is finished in four or five minutes. Another mode is sometimes pursued at these *matanzas*. A machine with a pulley and winch at the extremity of the enclosure is erected. A bullock's horns are entangled in a rope which draws him on and thrusts his head through an opening in the paling, where a man stands ready with a stout dagger, with which he stabs the beast in the back of the neck, between the horns, so that he falls instantly dead.

Wild horses are taken with the laso in the same manner as oxen. It is very seldom that the hunters miss their aim, although at full speed; and even a man, however cautious, can no more avoid being taken thus, than a horse or an ox. The laso is one of the weapons which the South Americans use in their private quarrels and they also exercised it with great effect during the wars of the revolution, singling out

the Spanish officers in battle. The straggling robbers who infest the roads remote from the towns, also use the laso to entrap their victims. In an open country, the only chance for safety, is for the traveller attacked in this manner, to throw himself on the ground, keeping his legs and arms as close as possible, so that the rope may get no hold upon him. Among trees or under-wood, the laso is not dangerous; and if by a rapid advance toward the robber, the distance can be reduced to ten or fifteen yards before he throws it, his dexterity may be ineffectual; but at twenty or thirty yards' distance it is almost impossible to escape. The Indians, when they apprehend an attack of this kind, carry a lance with which they are equally dexterous in parrying it. The laso rope is made of thongs of bullock's hide, cut round the skin; these thongs are twisted, and rendered supple by grease. They are so strong that though when twisted, they are not thicker than the little finger, they will hold the wildest bull whose efforts to escape would break a hempen rope of much larger dimensions.

A large part of the trade of Buenos Ayres, consists in the hides of the wild horses and cattle, taken upon the pampas. In 1832, the export alone, amounted to about 925,000 hides of cattle; 4071, of horses; and 2,049,000 horns. This must be considered as probably not more than one half of the number actually taken every year in South America.

The Jesuit missionary Dobrizhoffer, who, during the last century, resided many years in Paraguay, writes as follows. "The whole world does not contain a country more numerously supplied with oxen,

horses, mules and sheep, which were formerly brought to Paraguay, and in the course of two hundred years increased marvellously, both on account of the richness of the pastures, and the unbounded liberty they possessed of wandering up and down the plains. The quantity of kine which exists there is scarcely credible to a European. Fifty years ago, when all the plains were covered with wild oxen, travellers were obliged to send horsemen before them, to clear the way by driving off the beasts which stood threatening them with their horns. It is therefore no wonder that at that time a full grown ox was sold for a real (12½ cents,) as appears from the old books of valuations. Every Spaniard who intended to enlarge his estate, hired a troop of horse which brought him eight, ten or more thousands of cows and bulls from the country within a few weeks. Do you desire to be made acquainted with the shape of the Paraguayan oxen? In height they equal those of Hungary, and surpass them in general size, although their color is different. With a sort of ferocious arrogance they imitate stags in the manner of holding their lofty heads, and almost equal them in swiftness. Unless the pastures are impoverished by a long drought, every ox yields such a weight of fat, that two strong men are scarcely able to carry it. The fat of oxen is always used for butter in culinary preparations, for the cows are very seldom milked on account of their ferocity; the taming of them is a long and laborious process, and consequently no way congenial to the slothful temper of the Spaniards and Indians. When tamed, they will not suffer themselves to be milked unless their feet are tied, and

their calves are standing by them. A butcher and shambles are words unknown in Paraguay; every man slays his own oxen. The poorer people do not buy pounds of meat, as is customary in Europe, but receive large parts of slaughtered oxen from the liberality of the rich.

“The ox-hides are carefully fastened to the ground to be dried, with wooden pegs, under shelter in a place where the fresh air is admitted; and lest moths should gnaw them or strip them of their hairs, they are carefully beaten with sticks for a week or fortnight. The Spaniards finding that the trade in hides was more profitable to them than all others, were seized with a blind rage for killing all the oxen they could lay their hands on. The flesh, after being stripped, and which would suffice to feed a numerous army in Europe, is left on the plains to be devoured by dogs, wild beasts and birds; and indeed one might fear lest the air should be corrupted by such a quantity of carrion.

“This custom of hunting and slaughtering oxen being continued for a century, exhausted almost all the plains of wild cattle. You no longer saw those public and immense herds of oxen which belonged to nobody in particular, but might be appropriated to the use of any one. It must be ascribed to the nature and extent of these plains, that in Paraguayan estates, the oxen are still so numerous that Europe may envy, but cannot hope to equal them. I have known Spaniards who possessed 100,000 oxen. Who can reckon the number of hides daily employed in manufacturing ropes, building hedges and houses, making trunks,

saddles, and inwrappers for the herb Paraguay, tobacco, sugar, wheat, cotton and other things? The common people among the Spaniards have no other bed than an ox-hide spread on the ground, which is also the case with an innumerable crowd of negro slaves. Beef is the principal, and almost the only food of the lower orders in Paraguay. Moreover that quantity of meat which would overload the stomach of a European, is scarcely sufficient to satisfy the appetite of an American. A Guarany after a very few hours' fast will devour a young calf. An Indian before he lies down to sleep, places a piece of meat to roast at the fire, that he may fall immediately to eating when he wakes. Place food before him, and the rising and the setting sun will behold him with his jaws at work and his mouth full, but with an appetite still unsatiated. Such being the voracity of the inhabitants, and so continual the slaughter of innumerable oxen, you will agree with me that Paraguay may be called the devouring grave, as well as the nursery of cattle.

“ Besides this incredible multitude of oxen, Paraguay breeds an infinite number of horses, all sprung from seven mares which the Spaniards brought with them. The whole of that plain country extending from the La Plata full two hundred leagues in every direction, is covered with droves of wandering horses, of which any person may catch as many as he likes. Some horsemen within a few days, bring home more than a thousand horses from the plains. A hunt of this kind is performed in various ways, some catch every horse they come near with a rope of hide; others construct a hedge with a wide entrance, like the sleeve of a

garment, through which they drive a herd of horses separated from the rest, into an inclosed space, where after they have been confined for some time, hunger and thirst render them gentle, and they are easily led away in company with the tame horses. Sometimes a part of the plain is set on fire, and a new growth of grass springing up, the horses crowd into the spot to graze, where they are surrounded by the hunters."

The voyager Dampier gives the following description of the manner of hunting wild cattle, or *hocksing*, as he calls it, in Campeachy. "This way of hocksing bullocks seems peculiar to the Spaniards, especially to those that live hereabout, who are very dexterous at it. For this reason some of them are constantly employed in it all the year, and so become very expert. The hockser is mounted on a good horse bred up to the sport, who knows so well when to advance or retreat upon occasion, that a rider has no trouble to manage him. His arms are a hocksing-iron, which is made in the shape of a half-moon, with a very sharp edge. This iron is fastened by a socket to a pole about 14 or 15 feet long. When the hockser is mounted, he lays the pole over the head of his horse with iron forward, and then rides after his game, and having overtaken it, strikes his iron just above the hock, and hamstringing it. The horse presently wheels off to the left, for the wounded beast makes at him presently with all his force, but he scampers away a good distance before he comes about again. If the hamstring is not quite cut asunder with the stroke, yet the bullock by continual springing out his leg, certainly breaks it, and then can go but on three legs, yet still

limps forward to be revenged on his enemy. Then the nockser rides up softly to him and strikes his iron into the knee of one of his forelegs, and then he immediately tumbles down. He gets off his horse, and taking a sharp pointed strong knife, strikes it into his poll a little behind the horns so dexterously, that at one blow he cuts off the string of his neck, and down falls his head. This they call *polling*. Then the hockser immediately mounts and rides after more game, leaving the other to the skinners who are at hand and ready to take care of his hide. The right ear of the hocksing horse by the weight of the pole laid constantly over it when on duty, hangs down always, by which you may know it from other horses.

“The Spaniards pick and choose only the bulls and old cows, and leave the young cattle to breed, by which means they always preserve their stock entire. On the contrary, the English and French kill without distinction, yea, the young rather than the old, without regard of keeping up their stock. Jamaica is a remarkable instance of this our folly in this particular, for when it was first taken by the English, the savannas were well stocked with cattle, but they were soon destroyed by our soldiers. Our English hunters have much lessened the numbers of the cattle in Campeachy, and those that are left, by constant shooting are grown so wild and desperate, that it is dangerous for a single man to fire at them or to venture through the savannas. For the old bulls that have been formerly shot, will make at him; and they will all draw up in *battalia* to defend themselves upon our approach, the old bulls in the front, behind them the

cows in the same manner, and behind them the young cattle. And if we strive to wheel about to get in the rear, the bulls will certainly face about that way and still present a front to us. Therefore we seldom strive to shoot any out of a great herd, but walk about in the woods close by the savanna, and there we light of our game. The beast makes directly at the hunter if it be desperately wounded, as I have experienced myself, but if but slightly, they commonly run away.

“The old hunters tell us that a cow is more dangerous of the two, because, they say, she runs at her enemy with her eyes open; but the bull shuts his, so that you may easily avoid him. But this I cannot affirm of my own knowledge, and rather doubt the truth of it, for I knew one shrewdly gored by a bull. He was a consort with Mr. Baker in the West Lagoon, where having tired themselves cutting logwood, they took an occasion to go in their canoe to Beef Island, to refresh themselves there a fortnight or three weeks, because here were several sorts of fruits, and plenty of cabbage to eat with their fresh beef, which they could not fail to meet with. They came to a place called the Salt Creek, and there they built them a hut. About 4 o'clock, while Mr. Baker lay down to sleep, his consort marched out into the savanna about a mile from their hut, and there coming within shot of a bull, wounded him desperately; but yet the bull had still so much strength left, as to pursue and overtake his adversary, trampling on him and goring his thigh so that he was not able to rise. The bull by this time was spent and fell down dead by him; and

there the man had also perished, if Mr. Baker had not come the next morning to seek him, who, finding him by the dead beast, took him on his back and lugged him home to their hut.

“The cattle in this country are large and fat in February, March and April; at other times of the year they are fleshy but not fat, yet sweet enough. When they have killed a beef, they cut it into four quarters, and taking out all the bones, each man makes a hole in the middle of his quarter, just big enough for his head to go through, then puts it on like a frock, and trudgeth home; and if he chances to tire, he cuts off some of it and flings it away. It is a diversion pleasant enough, though not without some danger, to hunt in a canoe; for then the cattle having no other feeding-places than the sides of the savannas, which are sometimes higher ground than the middle, they are forced sometimes to swim. So that we may easily come to shoot them when they are thus in the water. The beast, when she is so hard pursued, that she cannot escape, turns about and comes full tilt at the canoe, and striking her head against the prow, drives her back twenty or thirty paces; then she scampers away again. But if she has received a wound, she commonly pursues us till she is knocked down. Our chiefest care is to keep the head of the canoe towards her, for if she should strike against the broadside, it would endanger upsetting it, and consequently wetting our arms and ammunition. Besides, the savannas at this time swarm with alligators, and are, therefore, the more dangerous on that account.

“ When we killed a beef, if there were more than four of us, the overplus went to seek fresh game, while the rest dressed it. I went out the first Sunday and complied very well with my master’s order, which was only to help drive the cattle out of the savannas into the woods, where two or three men lay to shoot them; and having killed our game, we reached home with our burthens. The next Saturday after, I went with a design to kill a beef myself, thinking it more honor to try my own skill in shooting, than only to drive the game for others to shoot at. We went now to a place called the Upper Savanna, going four miles in our canoes, and then landing, walked one mile through the woods, before we came into the savanna, and marched about two miles in it before we came to any game. Here I gave my companions the slip, and wandered so far into the woods that I lost myself; neither could I find the way into the open savanna, but instead of that, ran directly from it through small spots of savannas and skirts of woods. This was some time in May, and it was between ten o’clock and one, that I was (as we called it, I suppose from the Spaniards,) *marooned*, or lost, and quite out of the hearing of my comrades’ guns. I was somewhat surprised at this, but however, I knew I should find my way out as soon as the sun was a little lower. So I sat down to rest myself, resolving, however, to run no farther out of my way, for the sun being so near the zenith, I could not distinguish how to direct my course. Being weary, and almost faint for want of water, I was forced to have recourse to the wild pines, and was by them supplied, or else I must have perished

with thirst. About three o'clock I went due north, as near as I could judge, for the savanna lay east and west, and I was on the south side of it.

"At sunset, I got into the clear open savanna, being about two leagues wide in most places, but how long I know not. It is well stored with bullocks, but by frequent hunting, they grow shy and remove farther up the country. Here I found myself four or five miles to the west of the place where I straggled from my companions. I made homewards with all the speed I could, but being overtaken by the night, I lay down on the grass a good distance from the woods, for the benefit of the wind to keep the moschetoës from me; but in vain; for in less than an hour's time I was so persecuted, that although I endeavored to keep them off by fanning myself with boughs, and shifting my quarters three or four times, yet still they haunted me so that I could get no sleep.

"At daybreak, I got up and directed my course to the creek where we landed, from which I was then about two leagues. I did not see one beast of any sort whatever, in all the way, though the day before, I saw several young calves that could not follow their dams, but even these were gone away, to my great vexation and disappointment, for I was very hungry. But about a mile further, I spied ten or twelve *quams*, perching on the boughs of a cotton tree. These were not shy; therefore, I got well under them, and having a single bullet, but no shot about me, fired at one of them, but missed it, though I had before often killed them so. Then I came up with, and fired at, five or six turkeys, but with no better success; so that I was

forced to march forward, still in the savanna, toward the creek; and when I came to the path that led to it through the woods, I found to my great joy, a hat stuck upon a pole, and when I came to the creek, I found another. These were set up by my consorts who were gone home in the evening, as signals that they would come and fetch me. Therefore, I sat down and waited for them; for although I had not then above three leagues home by water, yet it would have been very difficult, if not impossible, to have got thither by land, by reason of those vast impassable thickets abounding everywhere along the creek's side, wherein I have known some puzzled for two or three days, and have not advanced half a mile, though they labored extremely every day. Neither was I disappointed in my hopes, for within half an hour after my arrival at the creek, my consorts came, bringing every man his bottle of water and his gun, both to hunt for game, and to give me notice by firing, that I might hear them; for I have known several men lost in the like manner, and never heard of afterwards.

“Such an accident befel one Captain Hall of New England, who came hither in a Boston ship, to take in logwood, and was freighted by two Scotchmen; and one Mr. W. Cane, an Irishman, who designed to go with goods from Jamaica to New England. For that reason, when his logwood was aboard, he tarried at Trist with the ship, and hunted once in two or three days for beef to lengthen out his salt provision. One morning, the captain designing to hunt, took five of his men, with his mate, as also his merchant, Mr. Cane, along with him. They landed at the east end

of the island, which is low mangrove land; the savanna is a considerable distance from the sea, and therefore it is troublesome to get to it. However, unless they would row four or five leagues further, they could not find a more convenient place; besides, they doubted not of Mr. Cane's skill to conduct them. After they had followed him a mile or two into the woods, the captain seeing him to make a halt,—as being in some doubt,—to consider of the way, told him in derision, that he was but a sorry woodsman, and that he would swing him but twice round and he should not guess the way out again; and saying no more to him, went forward and bid his seamen follow him, which they did accordingly. Mr. Cane, after he had recollected himself, struck off another way, and desired them to go with him; but instead of that, they were all for following the captain. In a short time, Mr. Cane got out of the woods into the savanna, and there killed a good fat cow, and quartering it, made it fit for carriage, supposing the captain and crew would soon be with him. But after waiting three or four hours, and firing his gun several times without hearing any answer, he took up his burden and returned toward the sea-side; and upon giving a signal, a boat came and brought him aboard.

“In the mean time, the captain and his men, after four or five hours' ranging the woods, began to grow tired, and then his mate, happily trusting more to his own judgment, left him and the four seamen, and about four or five o'clock, being almost spent with thirst, got out of the woods to the sea-shore, and as weak as he was, fired his gun for the boat to fetch

him, which was immediately done. When he came aboard, he gave an account whereabout, and in what a condition, he left the captain and his men; but it being then too late to seek him, the next morning very early Mr. Cane and two seamen taking directions from the mate, who was so fatigued that he could not stir, where he had left the captain, went ashore, and at length came within call of him, and at last found him laid down in a thicket, having just sense to call out sometimes, but not strength enough to stand. So they were forced to carry him to the sea-side. When they had a little refreshed him with brandy and water, he told them how his company had fainted for thirst, and dropped down one after another, though he still encouraged them to be cheerful, and rest themselves awhile, till he got some supplies of water for them; that they were very patient, and that two of his men held out till five o'clock in the afternoon, and then they fainted also. But he himself proceeded in quest of his way till night, and then fell down in the place where they found him. The two seamen carried the captain aboard, while Mr. Cane searched about for the rest, but to no purpose, for he returned without them, and could never hear of them afterwards."

As illustrating the perils of cattle hunting in this quarter, we will relate another adventure from the same amusing narrator. "In the very height of the day-time, seven or eight men, English and Irish, went to a place called Pics Pond, or Beef Island, to hunt. This pond was never dry, so that the cattle drew hither in swarms; but after two or three days' hunting, they were shy, and would not come near the pond

till night; and then if an army of men had lain to oppose them, they would not have been debarred of water. The hunters, knowing their custom, lay still all day, and in the night visited this pond, and killed as many beefs as they could. This trade they had driven a week, and made great profit. At length, an Irishman going to the pond in the night, stumbled over an alligator that lay in the path. The alligator seized him by the knee; at which the man cried out, 'Help! Help!' His consorts not knowing what the matter was, ran all away from their huts, supposing that he was fallen into the clutches of some Spaniards, of whom they were afraid, every dry season. But poor Daniel, not finding any assistance, waited till the beast opened his jaw to take better hold, because it is usual for the alligator to do so, and then snatched away his knee and slipped the butt-end of his gun in the room of it, which the alligator gripped so hard that he pulled it out of his hand, and so went away. The man being near a small tree, climbed up out of his reach, and then cried out to his consorts to come and assist him, who being still within call, and watching to hear the issue of the alarm, made haste to him with firebrands in their hands, and brought him away in their arms, to his hut; for he was in a deplorable condition, and not able to stand on his feet, his knee was so torn with the alligator's teeth. The gun was found the next day, ten or twelve paces from the place where he was seized, with two long holes made in the butt-end of it, one on each side, near an inch deep, for I saw the gun afterwards. This spoiled their sport for a time, they being forced to carry the man to the

island Trist, where their ships were, which was six or seven leagues distant. This Irishman went afterwards to New England, in a ship belonging to Boston, and nine or ten months after returned to the bay again, being recovered of his wound, but went limping ever after."

We are told that there are some wild cattle in Texas and the adjacent districts of Mexico. These, as well as those of South America, are the offspring of European breeds, introduced centuries ago, by the Spaniards. The wild horses, also, of which there are multitudes in the far west, are sprung from European races; neither the ox nor horse being natives of the American continent. Several of the tribes of western Indians, especially the Camanchees, catch great numbers of the wild horses of the plains, and break them into use.

In the north of Europe, the bull still remains wild in the dense forests, but not in great numbers. The wild buffalo, which is found in small herds in Africa and Asia, is distinct from the ox, and also different from the bison or buffalo of our western wilds. Neither of these animals furnishes much exercise to the enterprise of the hunter.

BUFFALO HUNTING.

THE American buffalo, or more properly *bison*, is an object of great importance to the hunters and travelers in the western regions of this continent. These animals afford the chief supplies of meat, both to the

whites and the Indians who rove over the immense plains of the west. Their skins form excellent robes,



and serve for bedding, clothing, and various other purposes. The Indians moisten the skins with the brains of the animal, and work them between the hands till they become perfectly supple. The robes form an excellent protection against the rain when the hair side is worn outward, and against cold when it is worn inward. On these robes, the Indians frequently make drawings of their great battles and victories. The hair of the buffalo has been sometimes used in the manufacture of coarse cloth.

The flesh of the buffalo is somewhat coarser in its fibre than that of the domestic ox, yet travellers are unanimous in considering it equally savory as an article of food.

The flesh is more agreeably sapid, as the grass upon which these animals feed is short, firm and nutritious, being very different from the luxuriant and less saline grass produced on a more fertile soil. The fat of the buffalo is said to be far sweeter and richer than that of the common ox. Of all the parts that are eaten, the hump is the most famed for its peculiar flavor and delicacy; when dressed it is said very much to resemble marrow. The Indian mode of cooking the hump is to cut it out from the vertebræ, after which the spines of bone are taken out; the denuded portion is then covered with skin, which is finally sewed to the skin covering the hump. The hair is then singed and pulled off, and the whole mass is put into a hole dug in the earth for its reception, which has been previously heated by a strong fire. It is then covered with cinders and earth about a foot deep, and a strong fire is made over it. By noon of the next day it is fit for use. The tongue and marrow-bones are also highly esteemed. To preserve the flesh for future use, the hunters and Indians cut it into thin slices and dry it in the open air; a large stock of meat may thus be kept for a considerable length of time.

From the dried flesh of buffaloes, the fur-traders of the north-west prepare a food which is very valuable on account of the time it may be preserved without spoiling. The flesh is placed on skins and pounded with stones until sufficiently pulverized. It is then separated as much as possible from impurities, and one third of its weight of melted tallow of the animal is poured over it. This substance is called *pemmican*, and being packed firmly in bags of skin of a conven-

ient size for transportation, may be kept for a year or more without much difficulty.

During August and September the flesh of the bison bull is poor and disagreeably flavored. The animals are, however, much more easily killed, being not so vigilant as the cows, and sometimes allowing the hunters easily to come up with them. Lewis and Clarke relate, that once approaching a large herd, the bulls would scarcely move out of their way, and as they approached, they would merely look at them for a moment as at something new, and then quietly resume their grazing. The sense of smelling is remarkably acute in this animal, and it is stated by hunters that the odor of the white man is far more terrifying to them than that of the Indian.

The herds of buffaloes wander over the country in search of food, usually led by a bull most remarkable for strength and firmness. While feeding, they are often scattered over a great extent of country, but when they move in a mass, they form a dense and almost impenetrable column, which, once in motion, is scarcely to be impeded. Their line of march is seldom interrupted even by considerable rivers, across which they swim without fear or hesitation nearly in the order that they traverse the plains. When flying before their pursuer it would be in vain for the foremost to halt or attempt to obstruct the progress of the main body; as the throng in the rear is still rushing onward, the leaders must advance although destruction awaits the movement. The Indians take advantage of this circumstance to destroy great numbers of them, and certainly, no mode could be resorted to more

effectually destructive, nor could a more terrible devastation be produced than that of forcing a numerous herd of these large animals to leap together from the brink of a dreadful precipice upon a rocky and broken surface a hundred feet below.

When the Indians determine to destroy buffaloes in this way, one of their swiftest footed and most active young men is selected, who is disguised in a buffalo skin, having the head, ears and horns adjusted on his own head, so as to make the deception very complete, and thus accoutred he stations himself between the herd and some of the precipices that often extend for several miles along the rivers. The Indians surround the herd as nearly as possible, when at a given signal they show themselves and rush forward with loud yells. The animals being alarmed, and seeing no way open but in the direction of the disguised Indian, run towards him, and he taking to flight, dashes on to the precipice where he suddenly secures himself in some previously ascertained crevice. The foremost of the herd arrive at the brink ; there is no possibility of retreat, no chance of escape ; the foremost may for an instant shrink with terror, but the crowd behind, who are terrified by the approaching hunters, rush forward with increasing impetuosity, and the aggregated force hurls them successively into the gulf, where certain death awaits them.

It is very fortunate that this sanguinary and wasteful method of killing buffaloes is not very frequently put in practice by the savages, or we might expect these animals in a few years to become entirely extinct. The waste is not the only unpleasant circum-

stance consequent upon it ; for the air, in the space of a few days, is filled with the horrible stench arising from the putrefying carcasses not consumed by the Indians after so extensive and indiscriminate a slaughter. For a considerable time following such an occurrence, the wolves and vultures feast sumptuously, and fatten to tameness on the disgusting remains, becoming so gentle and fearless as to allow themselves to be approached by men and knocked down with a stick.

A more common way of killing buffaloes is by attacking them on horseback. The Indians, mounted and well armed with bows and arrows, encircle the herd and gradually drive them into a situation favorable to the employment of the horse. They then ride in and single out one, generally a female, and following her as closely as possible, wound her with arrows until the mortal blow is given, when they go in pursuit of others until their quivers are exhausted. Should a wounded buffalo attack the hunter, he escapes by the agility of his horse, which is usually well trained for the purpose. When the hunting is ended, and a sufficiency of game is killed, the squaws come up from the rear to skin and dress the meat, a business in which they have acquired great dexterity. If a buffalo is found dead without an arrow in his body, or any particular mark attached, it becomes the property of the finder.

When the ice is breaking up on the rivers in the spring, the dry grass of the surrounding plains is set on fire, and the buffaloes are tempted to cross the rivers in search of the young grass that immediately succeeds the burning of the old. In the attempt to

cross, they are often insulated on large cakes of ice. The savages select the most favorable points for attack, and as the buffalo drifts along, the Indians leap with wonderful agility over the ice to attack him, and as the animal is necessarily unsteady, and his footing very insecure, he is soon conquered.

The Creek Indians make a buffalo-pound by fencing a circular space of about a hundred yards' diameter. The entrance is banked up with snow sufficiently high to prevent the animals from retreating after they have once entered. For about a mile on each side of the road leading to the pound, stakes are driven into the ground at nearly equal distances of about twenty yards, which are intended to look like men and to deter the animal from endeavoring to break through the fence. Within fifty or sixty yards of the pound, branches of trees are placed between the stakes to screen the Indians who lie down behind them to wait for the approach of the buffaloes. The mounted hunters display the greatest dexterity in this sort of chase, as they are obliged to manœuvre around the herd in the plains, so as to urge them into the road, which is about a quarter of a mile broad. When this is effected, the Indians raise loud shouts, and pressing closely on the animals, terrify them so much that they rush heedlessly forward towards the snare. When they have advanced as far as the men who are lying in ambush, these also show themselves, increasing the consternation of the buffaloes by shouting violently and firing their guns. The affrighted animals have no choice but to rush directly forward into the pound, where they are quickly despatched with guns or arrows.

To show the strength of the buffalo's sense of smelling, we may relate the following circumstance which took place during Major Long's expedition. The party were riding through a dreary and uninteresting country, which at that time was enlivened by vast numbers of buffaloes, which were moving in countless thousands in every direction. As the wind was blowing fresh from the south, the scent of the party was wafted directly across the river Platte, and over a distance of eight or ten miles; every step of its progress was distinctly marked by the alarm and consternation it produced among the buffaloes. The instant their atmosphere was infected by the tainted gale, they ran as violently as if pursued by mounted hunters, and instead of fleeing from the danger, they turned their heads towards the wind, eager to escape the terrifying odor. They dashed obliquely forward towards the party, and plunging into the river, swam, waded and ran with headlong violence, in several instances breaking through the expedition's line of march. One of the party, perceiving from the direction taken by the bull which led the extended column, that he would emerge from the low river bottom at a point where the precipitous bank was deeply worn by much travelling, urged his horse rapidly forward that he might reach this station in order to gain a nearer view of these interesting animals. He had but just gained the spot when the formidable leader bounding up the steep, reached the summit of the bank with his fore feet, and in this position suddenly halted from his full career, and fiercely glared at the horse which stood full in his path. The horse was panic-struck

by the sudden apparition, trembled violently from fear, and would have wheeled and taken to flight, had not his rider exerted his utmost strength to restrain him. He recoiled, however, a few feet, and sunk down upon his haunches. The buffalo halted for a moment, but urged forward by the irresistible pressure of the moving column behind, he rushed onward by the half-sitting horse. The herd then came swiftly on, crowding up the narrow defile. The party had now reached the spot, and extended along a considerable distance; the buffaloes ran in a confused manner in various directions to gain the distant bluff, and many were compelled to pass through the line of march. This scene, added to the plunging and roaring of those which were yet crossing the river, produced a grand effect, that was heightened by the fire opened upon them by the hunters.

BEAR HUNTING.

THERE is a considerable variety of species in the family of bears, among which the brown bear of Europe and Asia is the most common. This was once numerous in all the temperate regions of the eastern continent, but it is now found only in the northern portions. Beside this, there are the Thibet, jungle, Indian and Malay bears, of the eastern hemisphere; the white, or sea-bear, of the polar regions; and the black, grizzly, barren ground and spectacled bears, of America. The latter is confined to the trop-

ical portions of the Andes, and is the only species found in hot countries.



Black bear of America.

In all countries which it inhabits, the brown bear is a favorite animal with the hunter, as well on account of its skin as its flesh. To the rude tribes which inhabit Asia, it is of the greatest value. It abounds particularly in Kamschatka, and here the people make beds, coverlets, caps, gloves, snow-shoes and harness of its skin; of its fat they make oil, and its flesh is a favorite species of food. Of the intestines they make window panes and masks to preserve the face of the ladies from the weather. The shoulder blades are converted into sickles for cutting grass.

In northern countries the skin of the bear is coveted for its fur; its grease is sent to all the capitals of Europe, to be converted into pomatum for the hair, and multitudes are caught young and trained to vari-

ous tricks, for which the creature has an aptitude. Many stratagems are naturally resorted to for the capture of an animal in such request as well in the countries where he is found as in more distant regions. In many cases he is openly attacked with clubs, spears and fire arms; in some cases he is caught in traps of logs, in others, he is taken in pit-falls. Sometimes a noose is so placed with a bait, that the creature in attempting to seize the latter, is strangled.

Hunting wild animals is practised in Sweden by what is called a *skall*, in which great numbers of people surround a large extent of territory, and march toward a central point, driving the animals before them, till they are pent up in so narrow a space that they cannot escape the shots of the hunters. By the laws of Sweden, when a *skall* takes place in any particular district, every house where cattle are kept is compelled to furnish, when required by the authorities, one man, as a contingent to aid in the hunt; as it is equally the interest of all persons possessing cattle to destroy such ferocious animals as wolves and bears. Should a Sunday or other holiday intervene between the appointment and the execution of the *skall*, a notification is given out from the pulpit, just before the conclusion of divine service, specifying the number of people required, the district from which they are to come, and the day, hour, and place of rendezvous.

The formation and arrangements of the *skalls* vary with the season of the year and nature of the country. In the summer *skalls* the greatest variety of game is collected. The winter *skalls* commonly embrace a

smaller extent of country, and bears are usually their object. The act of ascertaining the spot in which a bear has taken up his quarters in winter is called *ringing*, and is thus performed. When there is snow upon the ground, and the track of the animal is discovered, a person follows it until he judges himself near the bear's retreat. This is indicated by his proceeding very slowly and in a round-about course, or rather by his doubling in the same manner as a hare, for as long as he goes in a straight line he has no intention of lying down. The man now leaves the track, and begins making an extended ring round the suspected part of the forest. Should he complete this circle without again meeting with the track, he may be certain that the bear is within it. If, on the contrary, he finds that the animal has proceeded beyond it, he commences another ring, and thus he continues till he succeeds in accomplishing his object. Sometimes the ring is six or eight miles in circumference; at other times not more than one. To ring a bear properly demands great experience, and during the operation the greatest silence and caution are necessary.

The following account of a skull in Dalecarlia is extracted from Lloyd's Field Sports of the North of Europe: "I was in the northern parts of the province of Dalecarlia when an express reached me from Mr. Falk, with intelligence that a she-bear and three very large cubs had been roused from their winter quarters, near to a hamlet called Skoga, situated about seven or eight miles from Stjern. He added, further, that they were safely 'ringed,' there being at that time much snow

upon the ground, and that he intended forthwith having a skull for the purpose of destroying them. On receiving this information, I lost no time in retracing my steps to the southward, upon which Mr. Falk, who had handsomely deferred making his final arrangements until my arrival, fixed upon an early day for the hunt. A Sunday happening to intervene, the usual notification was given in the several churches and the requisite number of men were ordered out.

“At an early hour on the appointed morning, the weather being clear and cold, Mr. Falk, together with several other gentlemen and myself, proceeded to the place of rendezvous, which was at some little distance westward of a lake called the Boda. Here we found upwards of five hundred men assembled, whom Mr. Falk immediately formed into two divisions, and as they were universally armed either with axes, pikes or guns, they presented, as may be supposed, a rather warlike appearance. When all the necessary arrangements were completed, the people were marched off in single file to the ring, which was on the summit of a rather lofty range of hills at about three or four miles to the westward. Mr. Falk, on this occasion, took the command in person of the *dref* or driving division; the other, the *hallet*, or stationary division, he entrusted to one of the under forest-keepers, Jan Finne, one of the most daring bear hunters in the kingdom. Though still in the prime of life, this man had killed, according to his own statement, sixty-five of those animals with his own gun, independently of several others in whose death he had been accessory in skulls or otherwise. He had never been wounded

in a single instance, which was rather remarkable for an old bear hunter; though by his own statement he had experienced several narrow escapes. His good fortune in thus avoiding accidents was, however, owing to his management and judgment as well as to his superior skill in the use of the *skidor* or snow skates.

"The skull formed a circle, the circumference of which was upwards of 4000 paces. This was of a greater magnitude than is usual in the winter, in consequence of the known wildness of the bears we were then about to attack, those animals having already been on foot and changed their quarters three several times since they had been first disturbed about ten days before. For this reason it was highly inexpedient that the cordon should approach too near to them in the first instance. The extent of the ring was previously known to Mr. Falk, from one of his people having reckoned the exact number of steps it took him to go round it. On our way to the ring we met with one of Mr. Falk's people, who reported the bears to be still safe within it. This was the more gratifying intelligence, as from those animals having so frequently changed their quarters within a recent period, we were not a little apprehensive that they might again have moved off. On our reaching the vicinity of the ring, a general halt took place. Here the people were obliged to deposit their knapsacks, and their persons also underwent a vigorous search in order to deprive them of any brandy they might happen to have about them, as in the event of a few men being intoxicated the whole order of a skull is easily

destroyed. Drunkenness, on these occasions, is therefore severely punished by legal enactments.

“ After a little reorganization had taken place among the people, we again moved forward, though now in the most perfect silence, towards the ring. There was a light air at this time from the eastward, and Mr. Falk, in consequence, judiciously ordered Jan Finne, whose division was to form the western side of the skall, which, of course, would be under the wind, to lead in the first instance. This precaution, as it will presently be seen, was attended with the most fortunate results. On our reaching the ring, therefore, Jan Finne, with his division, to which I attached myself, branched off to the left, whilst Mr. Falk, with the remainder of the people, took the opposite direction. In this manner we proceeded to form the cordon, the track that we were to pursue having been marked out by those who had ringed the bears. For this purpose the rear of our line dropped a man, as had been previously determined upon, at about every nine paces. The people forming Mr. Falk’s division were stationed somewhat farther apart from each other.

“ The division to which I had attached myself was, as I have already stated, to form the *hallet*, or stationary part of the skall. After proceeding, therefore, for some distance, and on coming to a part of the forest where the trees were rather open, and where there was little underwood, I placed myself in the most favorable position I could select, some few paces in advance of the cordon. Here I had not waited more than ten minutes, the people all the while keeping the most guarded silence, when, to my left, a great shout was

set up of '*The bears! the bears!*' In looking in that direction I very indistinctly saw one of those animals at about a hundred paces' distance; but he was so shrouded in the thicket, and my view of him was so transitory that I did not think it worth while to fire. One of the peasants, however, discharged his piece at the bears, the four being together, though, I believe, without effect. This shot, nevertheless, together with the shouts of the people, was the means of turning them, for they instantly headed about and faced toward the opposite or eastern side of the ring. It was fortunate they took this direction, as, had they made to the northward, from the cordon being at that time incomplete, they would in all probability have escaped. I was much afraid this would have been the case, and so were Mr. Falk and Jan Finne, both of whom, on hearing the shout, and apprehending what might happen, hurried forward their respective divisions as fast as possible, and, luckily, they were in time to form a junction before the bears made their appearance in that direction.

"Everything now remained perfectly tranquil for a long time; for even when the cordon was completed, it became necessary to strengthen those parts that were weakest, as well as to make other arrangements. At about one o'clock, three shots, the one from the centre, and the others from the wings, the usual signals on these occasions, together with the cries of the people which might now be indistinctly heard in the distance, announced that it was advancing toward us. Two hours or more, however, must have elapsed—during which, from the thermometer being little above zero,

and from my being provided with only my common shooting-jacket, I was almost dead with cold—before we had another discharge or saw anything of the bears; for now that these animals found themselves environed on every side, they kept the closest and most tangled brakes, and the people, as is usual on these occasions, proceeded at a very slow pace. Beginning to tire at last with remaining so long in the same position, I advanced alone about fifty paces further within the cordon, where I stationed myself in such a situation that I could command a tolerable view of the surrounding forest. This, however, was altogether contrary to rule.

“Here I had not remained a very long while when a shot to my left gave me to understand that the bears were not far off; and the next minute, at about one hundred and fifty paces from where I stood, I caught a glimpse of them as they were crossing a small opening among the trees. The old bear was in advance, and the cubs, which were of a very large size, were following in succession upon the track. I might now by possibility, have done execution, but thinking, from the direction they were taking, that they would come nearer to me, I refrained from firing; in this, however, I acted wrong, for, instead of facing toward me as I had anticipated, they made for the opposite side of the ring. Presently after, the shouts of the people, together with several shots, plainly indicated that they had made their appearance in that direction.

“Some little while subsequent to this I was joined by Lieutenant Oldenburg, of the Swedish army, who resided in the vicinity of my quarters, at Stjern. This

gentleman and myself were conversing together in an under tone of voice, and I had my double-barrelled gun, which was on the full cock, in my hand, when two of the young bears, either of them as large as animals of that species we are accustomed to see in England, suddenly made their appearance on the outskirts of a thick brake, at about twenty paces from where we stood. On seeing us, however, they squatted like rabbits. We both now fired, and the foremost of the bears as instantly fell; but the other at the same moment disappearing in the brake, I had no time to discharge my second barrel. As the one which was down however, showed some disposition to get on his legs again, I ran close up to him and sent a bullet through his skull. Besides the latter ball, the bear only received one other, which, on his body being opened, was recognized to be mine.

“For a while all remained pretty quiet, but presently afterwards, the tremendous shouts of the people opposite to us, together with the very heavy firing, plainly told us the remaining bears were endeavoring to make their escape in that direction. The scene had now become very animating. After a time, the firing ceased altogether, and Lieut. Oldenburg and myself were almost led to conclude that all the bears were slaughtered. In this supposition nevertheless, we were mistaken; for presently we viewed the old bear, who, from the manner of dragging herself along, was evidently much wounded, as she was slowly making her way across a small glade in the forest. I sent a ball after her, but as she quickly disappeared in a thick brake, we had no great reason to suppose it took the desired effect.

“ In the space of two or three minutes, during which several shots were fired immediately opposite to us, we again saw the old bear. Owing to an intervening brake, however, my view of her was much more indistinct than that obtained by my companions. At this time she was standing motionless, with her front towards us, and at about ninety paces' distance. Jan Finne and Oldenburg lost no time in discharging their rifles. Jan Finne fired the first, and though without a rest of any kind, with so good an aim that his ball, as was subsequently found, entered the breast near to the shoulder, and ran the whole length of the body where it lodged in her haunches. She did not, however, alter her position, and only noticed the wound she had received by a little shake of her head. Lieut. Oldenburg was, however, more fortunate, for dropping on one knée, and though like Jan Finne, without a rest, he took so good a direction that his ball entered the heart of the animal, when she instantly fell dead upon the spot.

“ The firing in front of us was, at intervals, still kept up for a minute or two longer, and then ceased altogether. On this Jan Finne, after we had advanced up to the bear which Lieut. Oldenburg and himself had just shot, hallooed to the people to halt. Though at this time we were hardly fifty paces from them, not one of them could we distinguish in consequence of the closeness of the cover. Jan Finne now informed Mr. Falk, who was along with his division, that three of the bears were dead within the ring; for independently of the two that we ourselves had killed, we observed a third lying *hors de combat* at some little

distance. In reply, that gentleman told us a fourth was killed near to where he stood ; so that all of those of which we had come in pursuit—and we had not the good fortune to meet with others in the same ring—were now slaughtered. The skull was then quickly brought to a conclusion, for with the exception of a few hares which the people knocked on the head with sticks, there was neither wolf nor other animal remaining within the ring."

The black bear of America is similar to the brown bear, we have described. It is now rare, east of the Alleghany mountains, though it is occasionally found in the wooded regions of the Catskill range. It is common in the western parts of the United States and British America.

The grizzly bear which is met with along the eastern borders of the Rocky mountains, is the largest and most formidable of the bear species, surpassing even the polar bear. It lives wholly on flesh, and does not hesitate to attack man, whenever he meets him. The encounters of travellers with this dangerous brute, have furnished us with many thrilling tales of peril. He often masters the bison, and one has been known to make a fierce resistance, after eight balls had passed through his body.

To the Indians of the west and north-west, the common black bear is an object of great interest, and hunting him is one of their most important avocations. They preface their expeditions with auguries, dances, and religious ceremonies, the design of which is to propitiate the bear-spirit, and induce him to give them success in the chase. They attack the animal with

spears, arrows and fire-arms, and often take him in traps and pit-falls. There seems to be a great resemblance between the arts of our savages and those of Siberia, in pursuing this animal.*

The British fur companies of the north-west collect great numbers of furs of different kinds, some of which are taken by their own hunters, and others are collected from, or brought in by, the Indians, to the trading stations. They export about 4000 bear skins annually.

The Russian settlers of the north-west, also collect a large number of bear skins as well as our own traders. The whole number of these animals, sacrificed every year to the appetite, comfort or luxury of man, amounts to many thousands. It is one of the curious incidents of trade, that the unguent which shines upon the soap locks of the dandy of London, Paris, or New York, is often from an animal which had its birth in a cavern of Kamschatka or Siberia, and has nearly circumnavigated the globe to fulfil its high destiny in another quarter of the world!

* For numerous anecdotes of hunting the bear, see "Illustrative Anecdotes of the Animal Kingdom."

THE FUR TRADE.



FURS are entirely the produce of nature, and as they can neither be cultivated nor increased, their value is not influenced by fashion alone, but depends materially on the larger or smaller supplies obtained by the hunters. The weather has great influence on the quality and quantity of furs imported from all quarters of the globe, and this circumstance renders the fur trade more precarious perhaps than any other. The quality and consequently the price of many furs differ from year to year, sometimes to the amount of 300 per cent. Those which are important objects of trade may be divided into three classes. The first class may be

considered as comprising articles of prime necessity ; and among these are distinguished an immense variety of lamb-skins, differing so widely from each other in size, quality, color, and value, that to most persons they would appear as the produce of so many different species of animals. These lamb-skins are produced in all parts of the globe, and are everywhere consumed, but they form in particular, an essential part of the dress of thousands among the lower classes in Russia, Poland, East Prussia, Hungary, Bohemia and Saxony. In Russia and other cold climates, the skins of various other animals may be considered as articles of actual necessity.

The second class forms, in a measure, part of the first, as it also comprises furs which through habit and fashion, have now become articles of necessity. Here may be enumerated all those different skins commonly called "hatting furs." Few persons who are not acquainted with this branch of the fur trade, can form an idea of its extent. It spreads, of course, over all parts of the globe where hats are worn, and requires very superior judgment and considerable capital to conduct it successfully. The furs now used for hat-making are beaver, musquash, otter, nutria, hare and rabbit. Nutria skins are comparatively a new article. They first began to be imported into England in large quantities about the year 1810, from Spanish America. Under the third class may be ranked all those furs which, though continually sold and used in immense quantities, must still be considered mere articles of taste, and their value varies according to the whims and fancies of different nations. There are, however,

exceptions among them, and many furs may be regarded as standard articles, since they are always used, though their price is much influenced by changes of fashion. This class comprises an almost endless variety, as within it may be brought the skins of most animals in existence, almost all of them occasionally appearing in the fur trade.

The countries richest in furs are North America and Asiatic Russia, and it is from these quarters of the globe that Europe receives its supplies of *peltry*, as the skins are called before their insides are softened and converted into a sort of leather. But many other countries produce very beautiful and useful furs. Africa and Australia afford the smallest quantities, and consume still less. From the former are brought only leopard and tiger skins, and from the latter those of the kangaroo, which, however, are never used properly as fur, being chiefly consumed by leather-dressers and tanners for the sake of the pelt.

Hatting furs are used throughout America and Europe, except in Turkey and Greece. The principal consumption of furs of the third class, or those used for purposes of luxury and fashion, is in China, Turkey, Russia, and the more civilized countries of Europe, particularly England. The use of fur in America is comparatively small. In Africa none but the Egyptians wear fur. In Austria none is consumed. It is a remarkable feature of the fur trade, that almost every country or town which produces and exports furs, imports and consumes the furs of some other place, frequently the most distant. It is but seldom that an article is consumed in the country where it is pro-

duced, though that country may consume foreign furs to a great extent. China is one of the best markets for furs. The Americans began, with their characteristic activity, to send furs to Canton very soon after the flag of the United States first appeared in the eastern seas in 1784, and the trade is still prosecuted by them to a considerable extent.

Besides numerous private traders, there are several fur companies of very long standing, which, in various countries, transact a great amount of business. Among these the first rank may be assigned to the Hudson's Bay Company, in London, not only on account of the extent of its business, but because it is one of the oldest chartered companies in England. The American Fur Company, in New York, stands next: they trade chiefly to London. The third is the Russian American Company, in Moscow; these trade to the Russian territories on the north-western coast of America, whence they draw their supplies, which are consumed chiefly in Russia. The fourth company of any consequence is the Danish Greenland Company in Copenhagen; they do but a very limited business, exposing their goods for sale once a year at Copenhagen.

The fur trade of North America was first practised by the early French settlers at Quebec and Montreal, and consisted then, as now, in bartering fire-arms, ammunition, cloth, spirits, and other articles in demand among the Indians, for beaver and other skins. In 1670, Charles II. established the Hudson's Bay Company, to which he assigned the extensive privilege of trading with the Indians in and about the vast inlet known by the name of Hudson's Bay. The company

founded establishments at Forts Churchill and Albany Nelson's River and other places on the west coast of the bay. But the trade they carried on, though a very profitable one, was said to be of limited extent, and their conduct on various occasions shows how strongly they were possessed with that spirit of jealousy which prevails in all societies of men endowed with peculiar privileges. This company's charter was never confirmed by act of parliament, and, in consequence, their claim to a monopoly of the trade rested upon no legal foundation, yet, by means of the superior advantages enjoyed by them, the business remained exclusively in their hands.

In 1783 the principal traders engaged in the fur trade of Canada formed themselves into an association called the Northwest Company, and established their head quarters at Montreal. This new company prosecuted the trade with great enterprise and considerable success. Mackenzie informs us that some of the persons engaged in it are employed at the distance of four thousand miles westward of Montreal. A very large caravan sets out every year from Montreal for the Grand Portage, on Lake Superior, where they meet those who have wintered in the remote establishments in the west, from whom they receive the furs collected in the course of the season, and whom they, at the same time, furnish with fresh supplies of the various articles required in the trade. Fort Chepywan, on the Lake of the Hills, was formerly one of the most distant stations of the Northwest Company, but many of the Indians who traded with the fort came even from beyond the Rocky Mountains.

The competition and success of the Northwest Company seem to have roused the dormant energies of the Hudson's Bay Company; and the conflicting interests and pretensions of the rival associations led to serious troubles. Under the auspices of the Earl of Selkirk, who was for a considerable period at the head of the Hudson's Bay Company, a colony was founded on Red River, which runs into Lake Winnipeg. The Northwest Company regarded this as an encroachment upon their own rights, and the animosities which followed led to the most violent proceedings on the part of the servants of both companies. At last, being wearied and impoverished by their dissensions, they united under the name of the Hudson's Bay Fur Company, which at present engrosses most of the fur trade of British America.

The beaver formerly inhabited almost every part of the territory comprised in the limits of the United States; but within comparatively a few years this animal has been exterminated in all the Atlantic and Western States, as far as the middle and upper waters of the Missouri. In the Hudson's Bay territory the beavers are rapidly becoming scarce, and the whole race will eventually be extinguished throughout the entire continent. The Indians inhabiting the countries watered by the tributaries of the Missouri and Mississippi, take the beavers principally by trapping, and are generally supplied with steel traps by the traders, who do not sell them, but let them out, in order to keep the Indians dependent on themselves, and also to lay claim to the furs which they may procure. The name of the trader being stamped on the

trap, it is equal to a certificate of enlistment, and indicates, when an Indian carries his furs to another trading establishment, that the individual wishes to avoid the payment of his debts. The business of trapping, which takes place in winter, requires great experience and caution, as the senses of the beaver are very keen, and enable him to detect the recent presence of the hunter by the slightest traces. It is necessary that the hands should be washed clean before the trap is handled and baited, and that every precaution should be employed to elude the vigilance of the animal.

The beavers swim to a considerable distance under water, but cannot remain for a long time without coming to the surface for air. They are therefore caught with greater ease, as they must either take refuge in their vaults or washes in the banks, or seek their huts again to get breath. When disturbed, they usually fly from their huts to these vaults, which, though not so much exposed to observation as their houses, are yet discovered with sufficient ease, and allow the occupant to be more readily captured than if he had remained in his ordinary habitation. To capture beaver residing on a small river or creek, the Indians find it necessary to stake the stream across to prevent them from escaping, and then to ascertain where the vaults or washes in the banks are situated. This can be done only by those who are experienced in such explorations, and is thus performed. The hunter is furnished with an ice-chisel lashed to a handle four or five feet in length. With this instrument he strikes against the ice as he goes along the edge of the banks. The sound produced by the blow

informs him when he is opposite one of the vaults. When one is discovered, a hole is cut through the ice of sufficient size to admit a full-grown beaver, and the search is continued until as many of the places of retreat are discovered as possible. During the time the most expert hunters are thus occupied, the others, with the women, are busy in breaking into the beaver houses. The animals, alarmed at the invasion of their dwelling, take to the water and swim with surprising swiftness to their retreats in the banks; but their entrance is betrayed to the hunters watching the holes in the ice, by the motion and discoloration of the water. The entrance is instantly closed with stakes of wood, and the beaver, instead of finding shelter in his cave, is captured. The hunter pulls the animal out, if within reach, with his hand, or by a hook with a long handle. Beaver-houses in lakes or other standing waters offer an easier prey to the hunters, as there is no necessity for staking the water across.

Among the Hudson's Bay Indians, every hunter has the exclusive right to all the beavers caught in the washes discovered by him. Each individual, on finding one, places some mark, as a pole, or the branch of a tree stuck up, in order to know his own. Beavers caught in any house are also the property of the discoverer, who takes care to mark his claim, as in the case of the washes.

Beside beavers, there are a great number of other fur-bearing animals caught by the hunters of North America, as the following table of the skins exported from the British settlements alone, in the year 1831, will show.

	No. of skins.		No. of skins
Beaver, . . .	126,944	Racoon, . . .	325
Bear, . . .	3,850	Weasel, . . .	34
Deer, . . .	645	Wolvereen, . . .	1,744
Fox, . . .	8,765	Wolf, . . .	5,947
Lynx, . . .	58,010	Mink, . . .	9,298
Musk-rat, . .	375,731		

There are a considerable number also exported, not included in the above statement. The annual value of all the furs exported from British America, is estimated at ten millions of dollars, which is, probably, not more than half the value of all the furs, produced by North America, each year.

As the most valuable furs are taken in the coldest regions, many of the hunters experience the greatest hardships in pursuing animals in high latitudes. In Siberia, especially, the adventurers seek the sable and marten, even within the Arctic Circle, and nothing can exceed the dreariness of the life they lead in these chill and solitary realms. Some of them are sent thither by the government, who exact from the unhappy exiles, the stipulated supply with the most rigorous severity.



BIRD CATCHING.



THE Orkney and Shetland Islands, and the Hebrides exhibit the most striking instances of adventurous daring in this pursuit. It is a common employment in some of these islands to gather among the crags the eggs of the sea-fowl, and to catch the birds themselves. Compared with this, the part of him who "gathers samphire" on the cliffs of Dover, is one of safety and pleasure. The sea-fowl make their resort in the cavities of lofty and beetling cliffs of the rocky shores; and the natives, by means of a rope

round the body, let themselves down over precipices sometimes a quarter of a mile in height, the sight of which would disorder a man of common nerves. Yet the fowler, with a line of many fathoms held by several companions above, descends, and, disengaging himself from the rope, enters cavities in the rock higher than the arch of any Gothic church. In this dangerous labor many persons perish from falling stones and other causes. It is recorded that one of these adventurers discovered that the rope by which he was suspended was so much chafed by the edge of the rock, that he hung by a single strand. He could not give immediate signals to his comrades, and when he was drawn up, it was found that the extremity of his terror had been such as to blanch his hair. From the tops of these dizzy precipices, the mountainous waves breaking below seem like ripples, and the roar can hardly be heard.

It is chiefly on the most rugged shores of Scotland, or on the more craggy rocks of the adjacent islands, that bird catching is carried on in the perfection of its horrors. St. Kilda, a small island in the midst of the Atlantic ocean, contains a few people who, from infancy accustomed to precipices, drop from crag to crag as fearlessly as the birds themselves. Their great dependence is upon ropes of two sorts—one made of hides; the other of hair of cows' tails, all of the same thickness. These are of various lengths, from ninety to two hundred feet, and three inches in circumference. So valuable are these ropes, that one of them forms the marriage portion of a St. Kilda girl.

The favorite resort of sea-fowl, particularly the oily fulmars, is a tremendous precipice, about thirteen hundred feet high, formed by the abrupt termination of a hill which is supposed to be the loftiest precipitous face of rock in Britain. The brink is wet and slippery, and yet upon this treacherous surface the St. Kilda people sit upon the extremest verge; the youngest of them even creeping down a little way from the top after eggs or birds, which they take in great numbers.

But these pranks of the young are nothing, when compared to the fearful feats of the older and more experienced practitioners. Several ropes are first tied together to increase the depth of the descent; one extremity of these ropes is fastened around the waist of the bird catcher, the other extremity is then lowered down the precipice by the adventurer himself, then giving the middle of the rope to a single man, he descends, always holding by one part of the rope as he lets himself down, and supported only by the man above, who holds the rope in his hands, sometimes supporting his companion by one hand alone, looking at the same time over the precipice, without any stay for his feet, and conversing with the other, as he descends nearly four hundred feet.

Accidents are said to be of rare occurrence, though of course they do occasionally happen; but escapes sufficiently appalling to make the blood run cold to hear of, are often related.

Among other modes of catching sea-fowl at St. Kilda, that of setting gins and nooses is adopted. In one of these, set upon a ledge a hundred and twenty

feet above the sea, a bird catcher entangled his foot, and not being at the moment aware of it, was, on moving onward, tripped up and precipitated over the rock, where he hung suspended. He had no companion, and to add to his misfortune, darkness was at hand, leaving little prospect of his being discovered till morning. In vain he exerted himself to bend upwards so as to reach the noose, or grapple the rock. After a few fruitless efforts, his strength was exhausted, and in this dreadful situation, expecting, moreover, that the noose might give way every instant, he passed a long night. At early dawn by good fortune, his shouts were heard by a neighbor, who rescued him from his perilous situation.

Another incident of this kind terminated in a more awful manner. A father and two sons were out together, and having firmly attached their rope to the summit of a precipice, descended on their usual occupation. Having collected as many birds and eggs as they could carry, they were all three ascending by the rope, the eldest of the sons first,—his brother a fathom or two below him, and the father following last. They had made considerable progress, when the elder son looking upwards, perceived the strands of the rope grinding against a sharp edge of rock, and gradually giving way. He immediately reported the alarming fact. "Will it hold together till we can reach the summit?" asked the father. "It will not hold another minute," was the reply, "our triple weight is loosening it rapidly!" "Will it hold one?" said the father. "It is as much as it can do," replied the son; "even that is but doubtful." "There is then a

chance of at least one of us being saved; draw your knife and cut away below!" was the cool and intrepid order of the parent;—"exert yourself; you may yet escape and live to comfort your mother!" There was no time for discussion or for hesitation. The son looked up once more, but the edge of the rock had nearly severed the rope. The knife was drawn,—the rope was divided,—and the father and brother were launched into eternity!"

No species of the feathered race offers the fowler so abundant a prey as the Wild Pigeon of North America. The associated numbers of these birds, and the numerous flocks which compose the general swarm, are without a parallel in the world. They can be compared only to the finny schools of herrings which, descending from the Arctic regions, spread over the ocean to the extent of mighty kingdoms. However incredible such immense numbers may seem, yet it is no exaggeration to say that hundreds of millions of pigeons are habitually associated in feeding, roosting and breeding, without any regard to climate or season. The approach of this mighty feathered army with a loud rushing roar and a stirring breeze, attended by a sudden darkness, might be mistaken for a fearful tornado about to overwhelm the face of nature. For several hours together, the vast host extending some miles in width, continues to pass in flocks without diminution. The whole air is filled with them, and they shut out the light as if the sun was eclipsed. At the approach of evening they depart in a body for the general roost, which is often hundreds of miles from their feeding places, and is

generally selected in the tallest and thickest forest almost entirely divested of underwood. Nothing can exceed the waste and desolation of these nocturnal resorts. The tall trees for thousands of acres, are completely killed, and the ground is strewn with massy branches torn down by the clustering weight of the birds which have rested upon them. The whole region for several years afterwards presents a scene of devastation, as if the earth had been swept by the blast of a destructive whirlwind.

In the Atlantic States, although they never appear in such enormous multitudes, yet they are sometimes very numerous; and great havoc is made among them with the gun, the clap-net, and other implements of destruction. As soon as it is ascertained in a town, that the pigeons are in the neighborhood, the gunners turn out; the clap-net is spread out in a suitable place with decoys, and a small hut of branches is fitted up for the fowler at the distance of forty or fifty yards; the pigeons, attracted by the decoy, descend with great rapidity, and finding corn, buck wheat, &c., strewn about, begin to feed, and are instantly, by the pulling of a cord, covered with the net. In this manner, ten, twenty, and even thirty dozen have been caught at a time. In the mean while the air is darkened with large bodies of them moving in various directions; the woods also swarm with them in search of acorns, and the report of musketry is heard on all sides from morning till night. Wagon loads of pigeons are poured into the markets, where they have been sold as low as a cent a piece.

In the Western States where they are most abun-

dant, an immense number of young pigeons are taken at the breeding places. As soon as they are fully grown, the neighboring inhabitants assemble and encamp for several days in the neighborhood of the spot, with wagons, axes, and cooking utensils. The perpetual tumult of the birds, the crowding and fluttering multitudes, the thundering roar of their wings, the crash of falling trees from which the young are precipitated by the axe, all combine to produce a scene of indescribable and almost terrific confusion. It is dangerous to walk beneath these clustering crowds of birds, from the frequent descent of large branches broken down by the congregating thousands. The horses start at the noise, and conversation can only be heard in a shout. The young pigeons are extremely fat, and, as well as the old birds killed at the roosts, are often with a wanton prodigality and prodigious slaughter, strewed on the ground as food for the swine. Guns, clubs, long poles, pots of burning sulphur, &c., are employed for the destruction of the swarming host.

The bird's-nest trade of the East, is deserving of notice. The nest in question, is that of a species of swallow peculiar to the East India islands. In shape it resembles that of a common swallow, but is composed of a viscid substance resembling in external appearance and consistence, fibrous, ill-concocted isinglass. The exact nature of this material, as well as its origin, are unknown, some persons affirming that it is formed of the foam of the sea, or other marine products, and some that it is elaborated from the food of the bird. The best nests are found in deep, damp caves, and

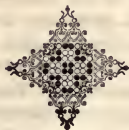
are taken before the birds have laid their eggs. The coarsest are those obtained after the young are fledged ; the test of excellence is the whiteness of the article. They are taken twice a year, and if regularly collected, and no unusual injury be offered to the caverns, the crop of nests will not suffer any diminution from year to year ; nor will the quantity increase by the caverns being left unmolested for a year or two. Some of the caves are extremely difficult of access, and the nests can only be collected by persons accustomed from their youth to the business. The most remarkable and productive caves in the island of Java, are those of Karang Bolang, in the province of Boglen, on the south coast of the island. Here the caves can only be approached by a perpendicular descent of many hundred feet with ladders of bamboo and ratan, over a sea rolling violently against the rocks. When the mouth of the cavern is reached, the perilous office of taking the nests must often be performed by torch-light, penetrating into recesses of the rock, where the slightest trip would be instantly fatal to the adventurers, who see nothing below them but the furious surf washing its way into the chasms of the rock.

These nests are most extravagantly esteemed by the Chinese as an article of luxury. The best kinds are sold for thirty dollars a pound. On account of their high price, they are of course consumed only by the rich, and indeed the best part is sent to Peking for the use of the court. They are used principally in soups, and are believed by the Chinese to be highly stimulating and tonic ; but it is thought by others that their most valuable quality consists in their being perfectly harm-

less. The people of Japan, who so much resemble the Chinese in many of their habits, have no taste for this luxury ; and how the latter acquired their predilection for this foreign commodity, is no less difficult to account for than the fact of their persevering in the use of it. Among the western nations, there is no parallel to this gastronomic whim, unless it be the extravagant estimation in which the Romans held some articles of luxury, remarkable for nothing but their scarcity and high price.

The only preparation which the bird's-nests undergo is that of simple drying without direct exposure to the sun ; after which they are assorted into three kinds for the Chinese market, and packed in boxes. A year's produce is estimated at nearly a million and a half of dollars. This income rests, as we have seen, upon the capricious wants of a single people. The places producing the nests are claimed as the exclusive property of the sovereign of the island or territory, where they are found, and always form a valuable branch of his resources, or of the revenue of the state. This value however is not equal in all cases, and depends upon the situation and the circumstances connected with the caverns in which the nests are found. Being often in remote and sequestered spots in a country so lawless, a property so valuable and exposed, is subject to the depredations of freebooters, and it not unfrequently happens that an attack upon it is a principal object of the warfare committed by one petty state against another. In such situations the expense of affording protection is so heavy, that the estates are necessarily of little

value. In situations where the caverns are difficult of access to strangers, and where there prevails enough of order and tranquillity to secure them from internal depredation, and to admit of the nests being obtained with no other expense, than the simple labor of collecting them, the value of the property is very great. The caverns of Karang Bolang, in Java, are of this description. These afford annually 6,810 pounds of nests, which are worth, at the Batavia prices, nearly 139,000 dollars, and the whole expense of collecting, curing and packing, is no more than 11 per cent on this amount. The price of the nests is of course a monopoly price, the quantity produced being limited by nature and incapable of augmentation. There is perhaps no article upon which human industry is exerted, of which the cost of production bears so small a proportion to the market price.



COMMERCE AND NAVIGATION



THE advantage of an interchange of commodities, one person supplying what was needed by another, must have been obvious in the earliest stages of society. Such interchange must have been, however, on a very insignificant scale among tribes living in a state of hunters, and seeking their subsistence, not from domesticated animals, but from the precarious spoils of the forest. Such appears from Scripture to have been the state of the central part of Asia, in the

ages following the flood. It was the condition, also, of the aboriginal Greeks, before Cadmus and other foreigners, arriving from the east, brought among them a knowledge of the useful arts; and it was the state of the greater part of England, on the first invasion of the Romans. Such, at the present day, is the condition of the Indians of North America, who roam over the vast tracts west and north-west of the Mississippi, obtaining by the chase, quantities of furs to exchange with English and American traders, but in other respects, living in great penury, and having few commodities to barter with each other.

In the next stage in the progress of society, the pastoral state accompanied with a little tillage, the interchange of commodities is still on a very limited scale. This is succeeded by the agricultural state, in which individuals and families collect in hamlets, villages, and finally in towns. Employment then becomes divided; people follow separate trades, and the products or workmanship of one are exchanged for those of another. Intercourse then assumes such a shape and magnitude, as to be entitled to the name of commerce. If it be asked in what parts of the world was the exchange of commodities first carried on to any considerable extent, we answer, in Mesopotamia, Egypt, and the more fertile provinces of the north of Arabia. For this, we have the direct authority of Scripture, as well as the indirect but powerful evidence afforded by the local advantages of certain tracts of country, such as those adjacent to the Euphrates and the Nile. In warm climates, the great desideratum in cultivation is a supply of water; and population first

becomes dense in districts which possess such a supply in abundance, whether from rivers periodically overflowing their banks, from streams descending from high grounds, or from a soil yielding water in wells at a slight depth from the surface. Now civilization and commercial intercourse depend on, or rather arise from, density of population. It is to this we should ascribe the early improvement of Egypt. To a similar cause, that is, to the dense population in Chaldea, caused by the fertilization of the soil from the overflowing of the Euphrates, we are to attribute the grandeur of Babylon, and the power of the Assyrian Empire.

Almost all trade in those ages, was carried on by land; and as there were neither roads for wheel-carriages, nor bridges over rivers, merchandise was transported on the backs of camels and other beasts of burthen. Traders proceeded, generally, in companies, for the sake of mutual aid and protection, exactly as is practised now, and on a larger scale, by caravans. The earliest attempts to convey commodities by water, were made on rivers and inlets of the sea, by canoes and rafts. Between these, the simple contrivances of a rude age, and the bark fitted to venture on the sea and encounter the winds and waves, the difference is very great. Ship-building and navigation are complicated arts, requiring both mechanical dexterity and a stock of knowledge which can exist only in a society considerably improved. Hence, commercial intercourse by sea is long in beginning, and for a time is practised on a very narrow scale. With the nations of antiquity, slowness was unavoidable, unacquainted

as they were with the mariner's compass, and limited in their knowledge of geography. One of the earliest branches of navigation was that of the Red Sea, on which commodities were transported from Arabia to Cosseir, the out-port of Thebes in Upper Egypt. This merchandize is supposed to have been the produce of India, imported in the first instance into Arabia. The traffic appears to have been considerable, and was one cause of the great population of Thebes. But the foreign commerce of Egypt was surpassed by that of the Phenicians, who were altogether commercial in their habits and laws. Sidon, the first great seaport mentioned in history, was only 150 miles from the mouth of the Nile, and the foreign trade of Egypt was carried on by Phenician mariners, first of Sidon and afterwards of Tyre. Confined at first to the adjacent countries, namely, Egypt, Cyprus and Cilicia, the Phenician navigators ventured in the course of time, to take a wider range, visiting and planting colonies in Crete, Greece, Libya and Sicily. In all these countries the inhabitants were uncivilized, and were indebted to the Phenicians for the rudiments of knowledge, and the introduction of the useful arts.

The next country entitled to notice with respect to commerce, is Judea. The Jews progressively increased in numbers during the same centuries which elapsed between their settling in Egypt, and the era of their greatest prosperity, the reigns of David and Solomon. The distant seaports at which they traded, Ophir and Tarshish, have not been recognised with positive certainty by modern geographers. Their foreign commerce seems to have been discontinued after

the dismemberment of the kingdom which followed the reign of Solomon. From Phenicia and Egypt, civilization and commerce made their way to a quarter destined to become a copious fountain of instruction to the rest of the world. The early access to Greece from the comparatively improved countries in the south and east, was a most fortunate circumstance. No country is better situated for carrying on intercourse by navigation, and the Greeks were early addicted to this branch of enterprise. Their vessels were without decks, generally propelled by oars, and having only one mast, which was raised or taken down according to circumstances. Such was the Greek navy in the time of Homer, and during the three centuries which elapsed between the age of that poet and the national improvement which preceded the invasion of Greece by the Persians. Still, the navigation and commerce of Greece were very limited, even in her most prosperous times. They took place chiefly between the mother country and the colonies planted in Italy and Sicily to the west, in Ionia in the east, and in Thrace in the north. The more distant voyages of the Greek traders, were south to Egypt, north to Trebizond on the Euxine, and to the coast of the Adriatic. Westward, they hardly ever ventured beyond Sicily, leaving the maritime intercourse with Spain, Sardinia and the south of Gaul to navigators of a bolder character, the Carthaginians.*

The extensive conquests of Alexander the Great

* For an account of the maritime enterprises of the Carthaginians, see "Lights and Shadows of African History."

gave rise to new arrangements in regard to the trade of Greece with Egypt and India. The obstinate resistance made to his arms by Tyre, impressed him strongly with the resources of a maritime state, and as he ascribed the chief part of the wealth and power of Tyre to its trade with India, it was natural that after destroying that city, he should seek to establish a naval station in a position adapted for carrying on both that and other branches of commerce. Such a position he soon discovered near the western mouth of the Nile, where Alexandria, founded by him, became and continued for many centuries, the chief commercial city in the Levant, and after the ruin of Carthage, the greatest mart in the world.

The military habits of the Romans, and the want of a convenient seaport to their capital, estranged them from naval pursuits. They built galleys solely for the purpose of opposing the Carthaginians in war. When the power of Carthage was broken, and the dominion of Rome over Sicily and Greece became absolute, she had the full command of whatever naval power those countries possessed. The whole coast of the Mediterranean was now under her control, and piracy, which had hitherto been a great impediment to navigation, was checked. An extensive trade was carried on between the capital and the provinces, in particular with Sicily and Egypt, for corn, but the government discovered no wish to transfer to Roman citizens the management of the shipping thus employed; they left it in the hands of their subjects at Alexandria and other remote seaports, because they saw no political reason for its removal.

The consequences of the overthrow of the Roman Empire were in a commercial sense, unfortunate; suspending, in all the different parts of the empire, the free intercourse so long enjoyed under a common government. The towns were plundered, and property was unsafe under the control of rude and lawless invaders; manufacturers and artisans fled with their families to places of safety. Hence, the origin of Venice in a very singular position; the town being built on a collection of small islands separated from the main land by shallow lagoons. It was thus protected from attacks by land, and in some degree by sea, as vessels above a certain size could approach the town only by channels known only to the inhabitants. The result fully justified the confidence of the founders of Venice in its means of defence, and the city grew wealthy by its commerce. Constantinople, in like manner, was long preserved amid the general wreck of the empire. Protected by its fortifications, it continued an asylum for the property of merchants, and a centre for the intercourse of the seaports in the Mediterranean and Euxine, which still carried on trade. With India it also maintained its intercourse to a certain extent after the conquest of Egypt by the Saracens had interrupted the usual channel of navigation by the Red Sea. The route then adopted by merchants was very circuitous. Goods were transported from the coast of Malabar to the Indus, and carried up that river as far as possible, and thence by land to the Oxus, down which they were carried to the Caspian Sea. Crossing the Caspian, the vessels entered the Wolga, and sailed up that stream until they reached

the neighborhood of the Don. Here the goods were unshipped, carried by land to the banks of the Don and re-loaded in boats which proceeded down that river to the Euxine, where vessels from Constantinople waited their arrival. So long and expensive a conveyance was suitable only to goods of which the value was great compared to their bulk, as silks, cottons, and spices, which have at all times been the principal exports from India. Another and more direct route from India was by the way of the Tigris and Euphrates, and the desert and Palmyra to the coast of the Levant.

During the Middle ages, the cities of Amalfi, Pisa and Genoa were flourishing seaports. The Bank of Venice, the earliest establishment of the kind in Europe, was founded in the middle of the twelfth century. The merchants of the north of Italy were the authors of many valuable inventions and improvements, such as bills of exchange, the method of keeping accounts by double entry, the funding system, and that of creating and selling government stock. The trade and manufactures of the Spaniards appear, at this time, to have been confined to the supply of their own wants, and their foreign intercourse was very limited. The commercial association of the Hanse Towns was formed in the thirteenth century, and subsisted above 300 years; these towns were Lubec, Hamburg, and Brunswick, which were subsequently joined by others. The object was to provide security for mercantile property at a time when the different governments of the North of Europe afforded such security in a very limited degree.

No part of Europe has a stronger claim on the attention of commercial men than the Netherlands, particularly the maritime provinces of Flanders, Holland, and Zealand. Of these provinces, Flanders took the lead in agriculture. Manufactures were established at an early date both here and in Holland. In navigation, a decided superiority belonged to Holland and Zealand, both having a ready access to the sea. Hence, arose extensive fisheries, first on their own coasts, and afterwards at a distance in the North Sea ; hence also a coasting trade, which, as their seamen grew more skilful, was extended to the Baltic and Mediterranean. The Dutch thus became in the course of time, the naval carriers of the north of Europe. It is a curious fact that two centuries ago, Wentworth, Earl of Strafford, when appointed Lord Lieutenant of Ireland, and anxious to proceed from Wales to Dublin, was compelled to wait till a ship of war from the Thames came round to convey him and his suite across the Irish Channel. There were in those days no government packets, and no English merchant ships suitable for such a purpose ; the trade between England and Ireland being carried on almost wholly in Dutch vessels.

DISCOVERIES AND COMMERCIAL ESTABLISHMENTS OF THE PORTUGUESE IN INDIA.

THE mariner's compass had long been known in Europe before any considerable use had been made

of it in the prosecution of those voyages which have justly excited the admiration of mankind. Superstition and bloodshed, foreign war and domestic commotions engrossed nearly the whole attention of mankind, so that commerce was but little prosecuted by the European states until the daring genius of Vasco de Gama, Columbus and others awakened both princes and people to a spirit of adventure and discovery. The Arabians, in the meantime, who had been plunged in superstition, forsook their supineness and began to improve the advantages which conquest had put into their hands. They turned their thoughts toward the sciences, and encouraged the art of navigation, in which they had already made a great progress. The Cape of Good Hope had not yet been passed, at least for the purposes of commerce. Being in possession of Egypt, they had it in their power to secure to themselves the trade of India on the south side of the isthmus of Suez, and Alexandria became the great emporium of that commerce. On the Mediterranean side, the trade was open from Alexandria to all the European powers, but the feudal system, a form of government unfavorable to trade upon a large scale, had spread itself over the western world. The people, the nobles, and even the monarchs lived in a kind of savage state; learning was engrossed by the clergy, and commerce was neglected; the first dawning of the sciences appeared in Italy. Venice and Genoa, two small republics, became, as we have seen, respectable and powerful by their attention to traffic; and by availing themselves of the supineness of their neighbors, they had, in a manner, engrossed the whole India trade on the Mediterranean.

The profits which arose from this commerce were the great motives of action to enterprise by sea. Another passage to India, naturally occurred to the people of Europe as soon as they began to turn their attention to these affairs, and the Portuguese had the honor of leading the way to those great undertakings, which have since added such a degree of celebrity to the navigators of Europe. In the year 1500, a twelvemonth after the return of the celebrated De Gama* to Lisbon, King Emanuel of Portugal, encouraged by his brilliant success, fitted out a fleet of thirteen sail for the purpose of founding a colony in India. This fleet, under the command of Pedro Alvarez de Cabral, in its passage to the south, steered so far to the west, in order to avoid the calms prevalent on the coast of Africa, that they came in sight of the continent of America at a point hitherto undiscovered. De Cabral named this new-found territory Santa Cruz; but it shortly afterward obtained the name of Brazil; and it was to this accidental discovery that the Portuguese owed the richest and most extensive colony which has ever been in their possession. One of the ships was sent back to Portugal with intelligence of this unexpected discovery, and the remainder pursued their course. Four of them were lost in a storm off the Cape of Good Hope, two others separated from the fleet, and the admiral reached Sofala, on the eastern coast of Africa, with but six sail, on the 16th of July, 1500. He touched at several ports in proceeding northerly, and then crossed the Indian

* For the history of Vasco de Gama's voyage round the Cape of Good Hope, see "Lights and Shadows of African History."

Ocean to Calicut. The Portuguese admiral entered into commercial arrangements with the Zamorin of Calicut, and the kings of Cochin and Cananor, and returned to Europe with a rich cargo.

The following year, Joam de Nova was despatched from Lisbon with four ships, and arrived in India without any accident. By this time, the Portuguese had contrived to embroil themselves with the natives. De Nova plundered and destroyed many vessels at Calicut. He took in a valuable lading at Cananor and Cochin, and steered for home. On his return, he discovered the Island of St. Helena. The next year Vasco de Gama sailed on his second voyage. He made no new discoveries, but effected some important commercial arrangements, and carried on hostilities with Calicut. The king of Quiloa, on the African coast, submitted to the Portuguese, and agreed to pay tribute. De Gama returned to Portugal with nine ships richly laden, leaving five in India to secure the factories established there.

The Portuguese thus having begun the career of conquest in the east, were constantly sending rich cargoes to their own country, and Europe resounded with the fame of their exploits. The port of Lisbon gradually became the resort of all the traders of Europe, and the grand mart of Indian commodities. To secure and extend these advantages, it became necessary for the government to adopt some system to correct and strengthen what was originally the offspring of chance. A grand political and commercial scheme was projected, wide enough to take in all objects, and so well connected that all the parts of the

great edifice designed to be raised, should mutually strengthen each other. Alonso Albuquerque was placed at the head of the colonial government, with the title of Viceroy of India.

The new viceroy entered upon his duties with spirit and zeal. He judged it necessary to form a settlement in some eligible spot where a good harbor, a salubrious air, and the means of safe defence, would enable the Portuguese to refresh themselves after the fatigues of their voyage from Europe. With this view, he cast his eyes upon Goa, which he foresaw would be an important acquisition to his countrymen. This city is situated on the coast of Malabar, on an island separated from the continent by the two branches of a river rising from lofty mountains in the interior. Goa has one of the finest harbors in the world. Numerous canals formed by the hand of nature, thick forests intersected by commodious roads, meadows emanell'd by an infinite variety of flowers, and villas in the most picturesque situations, render the neighborhood a most delightful spot. The city was considered, even at that time, as the most advantageous post in India. It belonged to the king of the Deccan, but the officer who was entrusted with the government of it at the time of the arrival of the Portuguese, had revolted, and set up an independent sovereignty, and at this period was endeavoring to extend his power in Malabar. While this usurper was meditating his schemes of conquest on the continent, Albuquerque suddenly appeared before the gates of Goa, took the city by storm, and after a short period of hostilities, established himself firmly in this quarter.

The natives were too weak, too dispirited, and too much at variance among themselves to check the successful progress of the active and enterprising invaders.

The Venetians soon perceived that their commerce and consequently their power, was in danger of falling into the hands of the Portuguese. Every expedient to counteract the schemes of their rivals, that an able administration could suggest, was practised by the wily Italians. Skilful emissaries were despatched to various parts of the east to persuade the Arabs in India and Africa, that, as their interests were connected with those of the Venetians, it was their policy to unite with them against the Portuguese, who had made themselves masters of the common source of their riches. The rumor of a league for this purpose reached the ears of the Sultan of Egypt, whose attention had been already drawn to this subject by the falling off of his revenue. The customs on India goods, which had formerly brought immense sums into his treasury, now produced little or nothing. Frequent bankruptcies which were the necessary consequence of the decline of trade, exasperated the people against government, which is commonly held responsible to the people for the calamities which they endure. The soldiery, being ill paid, raised mutinies. Such were some of the first consequences of the trade of India being diverted into a new channel.

To extricate themselves from these difficulties, it was necessary for the Egyptians to attack the Portuguese with a fleet, but the Red Sea afforded no ship-timber. The Venetians removed this obstacle by

sending wood and other materials to Alexandria, which were conveyed up the Nile to Cairo, from whence they were carried on the backs of camels to Suez, and in the year 1508, a fleet of ten sail weighed anchor from that port for India. The Portuguese, who foresaw this confederacy, had the preceding year laid a scheme to prevent the consequences, by making themselves masters of the Red Sea, being confident that with this advantage they should have nothing to fear from their rivals. They determined to seize the island of Socotora near the mouth of the Red Sea. A considerable armament under the command of Tristan da Cunha was despatched from Portugal with this object. On landing upon the island, they found it in possession of Ibrahim, the son of an Arabian prince, who held the sovereignty of the adjoining part of the continent. Ibrahim was killed in the first attack of the Portuguese; the capital of the island was besieged and captured by storm, although defended to the last extremity by a garrison superior in number to their assailants. The Arabs determined not to survive their commander; they refused to capitulate, and were, every man, put to the sword.

Notwithstanding this success, the Egyptian fleet found a safe passage to India, where it joined that of Cambaya. The Portuguese, who had sent a great number of their ships with merchandise to Europe, found themselves not a match for their enemies in the first rencounters, and suffered considerable loss; but this state of things did not continue long; the Portuguese received re-inforcements, and soon regained their superiority, which they ever after preserved.

The armaments which were despatched from the Red Sea, were always beaten and dispersed by the small Portugese squadrons that were kept cruising about the Straits of Babelmandel.

Albuquerque had a genius for great schemes of conquest and traffic. He began a negotiation with the Emperor of Abyssinia, for the purpose of attempting to induce him to turn the course of the Nile so as to open a passage from that country into the Red Sea. By this means he expected to render Egypt in a great measure uninhabitable, or at least, unfit for commerce. In the mean time, he proposed to transport into Arabia through the Gulf of Persia, a body of cavalry sufficient to capture the cities of Mecca and Medina. He imagined that by so bold a movement, he should strike terror into the Mohammedans and put a stop to that prodigious concourse of pilgrims which was the chief support of the commerce which it was his design totally to extirpate. But other enterprises, of a less daring and extravagant nature, and attended with more immediate advantage, induced him to postpone these schemes for a time. The conquest of Egypt by the Turks, a few years afterward, put a new face upon affairs.

Men of genius and reflection, who were capable of understanding the connection of events which had preceded and followed the discovery of the passage round the Cape of Good Hope, and of forming conjectures as to the consequences, could not help considering this event as constituting one of the most important eras in the history of the world. Europe had but just begun to recover its strength, and to shake

off the yoke of slavery which had oppressed its inhabitants from the period of the Roman conquests down to the institution of the feudal laws. Innumerable petty tyrants who had kept multitudes in a state of oppression and slavery, had been ruined by the crusades. To defray the expenses of these romantic expeditions, they had been forced to sell their lands and castles, and for pecuniary considerations, to allow their vassals privileges which at length reinstated them in the order of human beings. From this time, the right of property began to be introduced among the people, and gave them that kind of independence without which, property itself is a mere illusion. Thus, the first dawnings of liberty in Europe, however unexpectedly, owing to the crusades, and the rage of conquest, for once, contributed to the happiness of mankind.

Had Vasco de Gama not made his discoveries, it is highly probable that the spirit of liberty would again have been checked, and possibly extinguished without hopes of a revival. The Turks were on the point of expelling those savage nations, who, pouring down from the north, had driven out the Romans to become like them, the scourges of mankind; and the barbarous institutions of Europe would have been supplanted by oppressions still more intolerable. This must inevitably have been the case, had the Mussulman conquerors of Egypt not been repulsed by the Portuguese in their expeditions to India. The Turks, possessing the riches of Asia, would have secured their claim to those of Europe. As the trade of almost the whole world would have been in their

hands, they must necessarily have possessed the greatest maritime force that had ever been known. It is a singular fact that the Portuguese, probably the most superstitious and enslaved people of all Christendom, should be destined to check the progress of the fanaticism of the Mohammedans, and put a stop to their career of victories by depriving them of those sources of wealth which were necessary to the success of their enterprises.

Albuquerque, not satisfied with having taken measures for shutting up the Red Sea, attempted to acquire the command of the Persian Gulf. Near its entrance stands the island of Gombroon, where, in the eleventh century, an Arabian conqueror built upon a barren rock the city of Ormuz, which afterwards became the capital of an empire comprehending a considerable part of Arabia on one side and of Persia on the other. Ormuz had two harbors, and was well fortified. Its riches were entirely owing to its advantageous situation. It was the central point of trade between Persia and India, which was very great at a time when the Persians conveyed most of the merchandize brought from Asia to Europe through the ports of Syria. Ormuz exhibited at that period a scene of great wealth, and of the most thriving commerce. Its markets were thronged by merchants with their commodities from every quarter of the known world, and the manners of the inhabitants exhibited a degree of refinement and politeness seldom witnessed in a mere emporium of traffic.

The civility of the people, the regularity of the police, the variety of entertainments which the city

afforded, in connection with the interests of commerce, invited merchants and travellers from every nation. The streets were neatly furnished with mats, and in some places even with handsome carpets, for the convenience of pedestrians ; the linen awnings suspended from the housetops screened them from the sunbeams. Indian cabinets, ornamented with gilded vases, porcelain jars filled with flowering shrubs, and aromatic plants adorned the apartments of the houses. Camels laden with water were stationed in the public squares. Persian wines, perfumes, and all the delicacies of the table were furnished in the greatest abundance, and the music of the East was heard in the highest perfection. Ormuz was crowded with beautiful women from all parts of Asia, who were instructed from their infancy in every Oriental accomplishment. In a word, universal opulence, extensive commerce, refined luxury and politeness, and all the gaieties of a great and flourishing city combined their attractions in this spot.

Albuquerque, on his arrival in this quarter, began to ravage the coast and plunder the towns under the government of Ormuz. These inroads savored more of the pirate than of the warrior ; but Albuquerque hoped by these measures to strike such a terror into the sovereign as to induce him to submit at once to the Portuguese authority. As soon as he imagined he had spread a sufficient degree of alarm, he appeared before the city, and summoned the king to acknowledge himself tributary to the crown of Portugal, as he had formerly been to that of Persia. This proposal was rejected with scorn, and a fleet composed of ships of Ormuz, Arabia and Persia was equipped for

the defence of the place. A naval action ensued, in which the small Portuguese squadron destroyed the whole eastern armament. The king, discouraged by this mishap, opened a negotiation, and consented that the Portuguese should erect a fort which commanded the city and both its harbors. By this means, they succeeded in establishing themselves firmly at Ormuz.

Albuquerque now extended his scheme of conquest. The city of Malacca, situated in the straits of that name, was one of the most flourishing commercial marts in India; its harbor was constantly crowded with vessels from Japan, China, the Philippine and Molucca islands, as well as from Bengal, Coromandel, Malabar, Persia, Arabia and Africa. The Portuguese first appeared at Malacca in the character of merchants, but their usurpations and conquests in India had rendered their designs so much suspected, and the animosity of the Arabians had circulated reports so much to their disadvantage that plots were laid for their destruction. Several of them were massacred, others were thrown into prison, and the remainder were obliged to flee. The Portuguese viceroy was not displeased at this event, as it gave his projected design upon Malacca a color of justice. He did not hesitate a moment, but appeared with a fleet before the city in the year 1511. After several bloody engagements Malacca was taken. The conquerors found in it an immense treasure, vast magazines, and all sorts of rich merchandize. They established themselves firmly in this place, and shortly afterwards the kings of Siam, Pegu, and several other princes, alarmed at the victorious career of the Portuguese, sent ambassadors to Albu-

querque, to make him an offer of their trade, and to solicit an alliance with Portugal. These advantages were followed by acquisitions in the Molucca islands, and the establishment of the Portuguese in the island of Macao on the coast of China, and in Japan.

With these enormous successes, the avarice as well as the ambition of the Portuguese might well have been satisfied. They were masters of the coast of Guinea, Arabia, Persia, Hindostan, and Malaya; they possessed the Moluccas, Ceylon, and the Sunda Islands, while their settlement at Macao secured to them the commerce of China and Japan. Throughout these immense regions the Portuguese authority was supreme. No native or private person dared to make voyages or carry on trade without their permission; they reserved to themselves a monopoly of the most valuable articles of trade; consequently the prices of Indian commodities, both in Europe and Asia, were regulated at their discretion. The king of Portugal, one of the smallest kingdoms in Christendom, received tribute from more than one hundred and fifty eastern princes.

These successes properly improved might have formed a power so mighty that it could not have been undermined except by lapse of time. But the heroism, courage, activity and enterprise of the conquerors soon declined from their high and palmy state. The wantonness of victory, the abuse of riches and power, the vices and follies of rulers, and the indulgence in every sort of Oriental luxury soon wrought a material change in the manners of the conquerors. They became effeminate, indolent, and debauched; corrup-

tion prevailed in the finances, and rapacity, plunder, and oppression marked the whole course of their government. The great empire founded by the heroism of De Gama and Albuquerque, speedily declined under the imbecile sway of their successors, and the source of the glory, power and opulence of the Portuguese has now become that of their ruin and disgrace.

VOYAGES AND DISCOVERIES OF COLUMBUS.*

THE first voyage of this great discoverer, which was made in 1492, only disclosed to the knowledge of the Spaniards a group of islands in the west; but they imagined that the regions of Hindostan, China, and Japan lay immediately beyond them. On the second voyage of Columbus in the following year, he added to his discoveries the Caribbee Islands and Jamaica. On his third expedition in 1498, he steered farther to the south than before, and came within five degrees of the line. Thence steering to the north-west, he discovered the island of Trinidad, at the mouth of the Orinoco, the vast size of which river assured him that its source must be in a great continent. He next touched upon various parts of the continent forming the coast of the present districts of Caraccas, Cumana, and Paria, which, however, he then conceived to be an island. The shattered condition of his ships, scarcity of provisions, his own infirmities, together with the impatience of his crew, pre-

* For the life and voyages of Columbus, see "Lights and Shadows of American History."

vented him from pursuing his discoveries any further, and forced him to bear away for Hispaniola. On his route thither, he discovered the islands of Cubagua and Margarita, which afterwards became remarkable for their pearl fishery.

In 1502, Columbus sailed on his fourth and last voyage with four vessels, and provisions for two years. His design was to find a passage to the South Sea, which he believed to exist somewhere near the isthmus of Darien. As he approached the continent, he was becalmed and driven by the currents near the Queen's Garden, a group of islands and shoals to the south of Cuba. Here the calm changed to a storm, and for the space of seventy days they saw neither sun nor stars. The vessels were leaky, the crews worn out with fatigue, and their commander almost on the point of death, when they discovered a small island which was called by the Indians Guanajo. This was the Isle of Pines. The natives were friendly, and the Spaniards here met with a large boat, eight feet broad, with an awning of palm leaves, under which the women, children and goods were sheltered from the rain. She was from Yucatan, laden with cotton mantles, finely painted, wooden swords with sharp flint fastened into the edges, small copper axes, bells, plates, crucibles for melting copper, and cocoa, which served them for money. Columbus treated the Indians kindly, taking specimens of their cargo, and then dismissed them all except an old man, from whom he hoped to gain information. To the inquiry for gold, he gave them to understand by signs, that it was found to the eastward.

On reaching the coast of Honduras, the Spaniards

were struck with the evidences of superior civilization which the country exhibited. The inhabitants appeared to have made a greater progress in the cultivation of the useful arts than any tribe of the natives which they had yet seen. In return to the inquiries which the Spaniards made with their usual eagerness concerning gold, they directed them to the west, where, as they affirmed, it existed in great abundance. Columbus, however, had chiefly at heart the design of exploring an entrance to the South Sea; and instead of steering to the west, which course would have conducted him along the coast of Yucatan to the rich empire of Mexico, he bore away toward the Gulf of Darien. In this navigation he discovered all the coast of the continent from Cape Gracias à Dios to a harbor, which on account of its beauty and security, he named Porto Bello. He searched in vain for the imaginary strait through which he expected to make his way into an unknown sea; and though he landed several times, and advanced into the country, he did not penetrate so far as to cross the narrow isthmus which separates the Gulf of Mexico from the great southern ocean. He was so much delighted, however, with the fertility of the country, and conceived so high an idea of its wealth from the specimens of gold produced by the natives, that he resolved to leave a small colony on the river Belem, in the province of Veragua, under the command of his brother, and to return himself to Spain in order to procure what was requisite to render the establishment permanent. But the ungovernable spirit of his crews deprived Columbus of the glory of planting the first colony on the continent of America. Their insolence and rapacity

provoked the natives to take up arms, and as these were a more hardy and warlike race of men than the inhabitants of the islands, they cut off a part of the Spaniards, and forced the remainder to abandon a station that was found to be untenable.

This was the limit of the discoveries of Columbus. The remainder of his history, however interesting, cannot be detailed here ; and it is unnecessary to expatiate upon the great services which the intrepid navigator has rendered to the world by his discoveries.

VOYAGE AND DISCOVERIES OF MAGELLAN.

FERDINAND DE MAGELLAN, or Magalhaens, as the name is written in his native Portuguese, distinguished himself in the East Indies under the Viceroy Albuquerque, but thinking his services ill requited, he entered into the employment of Charles the Fifth of Spain. Columbus had already discovered in the west what was believed to be India, and the Spanish court formed the bold design of tracing out a new passage in that direction to the Molucca Islands, which were then known to them by report, and which they offered to prove, fell within the division of the globe assigned by the Pope to the King of Castile. Magellan was placed at the head of this expedition, which consisted of five ships and 236 men. He sailed from San Lucar, September 20th, 1519. The outset of his voyage was beset by the same obstacles which annoyed Columbus. Murmurs soon arose among the crews, and a conspiracy was formed against him as soon as he had put into the port of San Julian, in South

America. This he discovered and quelled. To one of the ships he sent a messenger with a letter to the captain, and a dagger, ordering him to plunge it into that officer's heart while he was reading the letter. He boarded the second ship and secured the mutineers; the third submitted. One of the captains was hung at the yard arm, and the other was turned ashore.

San Julian was on a part of the coast that had not been visited before. The natives were described as of a gigantic size, and wearing a kind of shoes made of hide, which caused their feet to look like an animal's hoof, on which account the Spaniards gave them the name of *Patagones*: in the Spanish, *pata* signifying a hoof or paw. This name has adhered to the country and its inhabitants ever since. Magellan lost one of his ships here, and steering to the south along the coast of Patagonia, reached the mouth of the celebrated strait which is now known by his name. The commander was obliged to exert all his authority to induce his men to venture into this unknown passage with a view of crossing the ocean beyond it, at the hazard of running short of provisions, as they had only three months' supply. One of the ships deserted him and sailed home. With the remaining three he proceeded through the strait, encountering much stormy weather, and at length on the 27th of November, he discovered the South Sea, the sight of which, says the narrator, brought tears of joy into the commander's eye.

The fleet now boldly launched into this wide ocean of the extent of which they had not the faintest knowledge or conception. On the 24th of January, 1521, they discovered a small uninhabited island which they

named San Pablo. On the 4th of February, another similar island was seen, which they named *Tiburones* or "Sharks." This island cannot at present be identified. It was singularly unfortunate for these adventurous navigators, that while in so destitute a condition with regard to provisions, mere chance should have led them upon such a track across this wide ocean, which contains such a multitude of fruitful and uninhabited islands, many of them mountainous so as to be seen at a great distance, and that nothing should have been discovered by them but a couple of barren and solitary islets.

As they proceeded, they endured great distress. Their provisions failed, and they were compelled to eat sawdust and the leather of the rigging. Many of the men were attacked by the scurvy, and twenty of them died. Fortunately they experienced a long continuance of mild and temperate weather, which caused Magellan to bestow upon this sea the name of the PACIFIC OCEAN, which name, as is well known, it has ever since retained, although it is appropriate only within certain latitudes. At length, after a voyage of upwards of four months from the Straits of Magellan, to their infinite joy, they discovered land. Two beautiful islands were seen on the 6th of March, and as the ships drew near, the inhabitants came off in canoes bringing yams, cocoa-nuts and rice. They were a stout, well-made people, of an olive complexion, with long hair, and teeth dyed red and black for ornament. They wore no other covering than a kind of apron of cloth made of the bark of trees, and they carried lances pointed with fish-bones. Their canoes

had shoulder-of-mutton sails, and each canoe had an outrigger, that is, a light boom or pole running out horizontally from the side of the canoe, and kept firm in its position by braces. This outrigger, by its weight and buoyancy, kept the canoe steady, for, being a vessel of very light and narrow construction, it would, without such support, have been in danger of over-setting. The canoes were built exactly alike at both ends, and sailed either way with extraordinary swiftness.

Magellan wished to make some stay at these islands, but the natives were so much addicted to pilfering that quarrels soon became frequent. Whatever they could lay their hands on they were sure to steal, and the numbers that flocked on board the ships became so great that the commander ordered the decks to be cleared of such troublesome visitors. The natives resented this rough treatment and attacked the Spaniards with lances and stones. A battle ensued, and some of the Indians were killed. The ships, however, remained cruising near the islands, and the natives, in spite of what had happened, continued to visit them for the purpose of barter, till one evening they found a chance to steal a skiff that was towing astern of the admiral's ship, and carry it off. This so provoked him that he landed the next day with a large number of men, and set fire to their houses. Several of the natives were killed, and the Spaniards carried off all the provisions they could find. The Indians seeing so much mischief done on account of the boat, set her adrift, and the Spaniards picked her up. They named these islands the *Ladrones*, or Thieves.

Leaving these islands, Magellan sailed southwesterly, and discovered other islands, which were named the Archipelago of St. Lazarus. The inhabitants showed many marks of civilization and friendship to strangers. Some of the principal persons among them wore earrings, bracelets of gold, and long pieces of cotton cloth embroidered with silk about their heads. They were nearly naked, and their bodies were anointed with fragrant oil. Some of them had holes through the cartilage of the ears, wide enough for a man's arm to pass through. They had the custom of marking their bodies in the manner now known as *tattooing*, and they all chewed a kind of fruit called *areca*, wrapped up in the leaves of the same tree, which were called *betel*. Their arms were cutlasses, bucklers, clubs, and lances, many of which were ornamented with gold. Their lands were cultivated, and they had storehouses, in which were deposited cloves, cinnamon, pepper, mace, and nutmegs.

At the island of Mazagua, they visited the rajah, or sovereign. His house was built in the form of a haystack, thatched with banana-leaves, and resting upon four posts, so high in the air that it was entered by a ladder. The rajah at his meals sat on mats, cross-legged. The vessels in which he was served were of porcelain or gold, and the candles were made of gum. His hair was black, and hung loose on his shoulders. He had a light covering of silk on his head, and in his ears two rings of gold. Around his waist he wore a piece of cotton cloth embroidered with silk, which reached to his knees, and at his side a dagger, or short sword, with a golden handle. The

narrator also describes appearances of gold about his teeth, which will appear the less incredible when it is considered that at the present day the people of Macassar have a custom of drawing the natural teeth, and substituting golden ones. A large ingot of gold was offered to the Spaniards in exchange for six strings of glass beads; but this traffic was forbidden by the commander, that the islanders might not be taught to comprehend how much more the Europeans valued gold than their own merchandize. An Indian brought a jar of rice and some figs to sell, for which he demanded a knife. To ascertain the relative value which they set upon gold, some money was offered him, and among other pieces a doubloon; but the coin was refused and the knife taken in preference.

Magellan visited several other islands, which it appears belonged to the group now known by the name of the Philippines. He was well received and entertained, and he took formal possession of the territories in the name of the Spanish crown according to the mode observed in those days. At a small island called *Matan*, he demanded of the chief an acknowledgment of fealty and obedience to the Spanish sovereign, and also a submission to the king of the neighboring island of Zebu, whom he had converted to Christianity; threatening him with the destruction of his town in case these demands were not satisfied. The chief replied that he was willing to be on good terms with the Spaniards, and to supply them with provisions, but that he owed no obedience to strangers of whom he had never heard, neither would he submit to men whom he had long been accustomed to

command. Magellan very imprudently resolved to punish the chief for his contumacy, although his friend, the Christian king, attempted to dissuade him. Finding him determined, he then offered to assist him in the desperate enterprise with a thousand of his own troops ; but the Spanish commander was so fully persuaded that no number of Indians could withstand the assault of sixty armed Europeans, that he ordered the king to remain quietly aloof with his men in their canoes, that they might take notice how the Spaniards fought.

Leaving ten or twelve men to guard his boats, Magellan marched at the head of about fifty to attack some thousands of Indians. No enemy at first appeared ; the Spaniards began to set fire to the houses, when, suddenly, a strong body of natives appeared on their flank. By the time the Spaniards had thrown themselves into order of battle to receive them, another body appeared on the other flank, and then another in front. The Indians, however, did not venture on a close attack, but poured in their arrows and other missiles from a distance, against the musketry and crossbows of the Spaniards. This skirmishing continued the greater part of the day, when the islanders, finding that they received less injury than they apprehended, were encouraged to approach near enough to aim their darts at the person of the commander. In order to intimidate them, he ordered a few men to set fire to the houses in the neighborhood, about twenty of which were consumed ; but this produced an effect contrary to what had been anticipated. Either from rage at seeing their dwellings burnt, or thinking they could

attack the detachment with advantage, the Indians rushed toward the spot, and two of the Spaniards were killed. The conflict now grew serious ; the ammunition of the Spaniards began to fail, and their fire slackened, which, being observed by the islanders, they pressed the attack more closely, and Magellan found it necessary to order a retreat.

The Christian king, during the whole of this time, had paid the most exact obedience to the orders which were given him ; he and his men sat quietly looking on, without moving from their canoes. The person of Magellan being known to the Indians of Matan, their shots were principally pointed at him, and he was presently wounded by an arrow. The boats toward which they were retreating were still at a distance, and many of the Spaniards, instead of preserving order in their ranks, retreated with precipitation, and their march became more confused in consequence of the rockiness of the shores. The helmet of Magellan was twice beaten off his head by stones ; he received a wound which disabled his right arm, and, being closely pressed by multitudes, he was soon brought to the ground, where an Indian thrust him through with a lance. The Christian king seeing the rout of the Spaniards, hastened to their relief, and secured their retreat. Eight Spaniards were killed, besides their commander, and twenty-two were wounded.

Thus unexpectedly fell Magellan, in a quarrel most unjustifiably provoked by himself, and prosecuted with rashness and presumption. Yet his courage, enterprise and fortitude make him well worthy of the title

of Great Captain, bestowed on him by the historian of America. A strong and peculiar feature of his character appears to have been inflexible perseverance. He was firmly bent on the performance of whatever he undertook, and no common discouragements would turn him from his purpose. He was a man formed to encounter difficulties; and while he believed them surmountable they increased the earnestness of the pursuit. In resolution and decision, whatever may be said of his judgment, few men of any age have equalled him. As a navigator he was not inferior to any of his time; and as a discoverer he was second only to Columbus, whose enterprise was so grand that it left no room for an equal.

Though Magellan did not, strictly speaking, circumnavigate the globe, yet by his having, previous to this voyage, been in the East Indies, he was not many degrees short of having made the circuit. The honor of being the first man who completed the European navigation round the world belongs indisputably to him, in consequence of his sailing in a westerly route beyond the meridian of the Moluccas, which had been visited from the opposite quarter.

The disaster of the Spaniards entirely lost them the confidence of the king of Zebu, who now sought only an occasion to get rid of his guests. He treacherously invited them to a feast, and when they were suspecting nothing, the Indians fell upon them and massacred half their number. The remainder made their escape, and pursued their voyage to the west. They visited many small islands, and on the 5th of July reached Borneo. The ships cast anchor in a port

about three leagues from the city of this name, and the next morning three boats with their prows carved in imitation of serpents' heads and gilt, came toward them with trumpets, drums, and other loud music. The people saluted the Spaniards by taking off their silken caps, and the latter welcomed them with a salute: presents were interchanged, and the Spaniards were invited to visit the king. Seven of them went on shore. They were received by a large body of men, armed with bows and arrows, sabres, shields and breast-plates of tortoise-shell. An elephant was brought to the landing-place, on whose back was fixed a wooden castle with six armed men. The elephant stooped to admit the strangers, and they were carried to the king, who, having satisfied his curiosity, dismissed them with a present. The town appeared to contain about a hundred thousand inhabitants; and the houses were built on piles standing high out of the water. The king's house was of stone, and surrounded by a brick wall, on which were mounted above sixty pieces of cannon, principally of brass.

The country appeared exceedingly fertile, producing rice, sugar, ginger, camphor, mirabolans, wax, gum, and a great variety of fruits. The inhabitants possessed elephants, camels, horses, buffaloes, asses, sheep, goats, geese, poultry, &c. They appeared to be rich in gold, pearls and jewels. They manufactured porcelain of a light colored earth, which they buried under ground for fifty years; so that it was proverbial among them that they made porcelain not for themselves but for their posterity. They were acquainted with letters, and wrote on bark. All these particulars

are the more interesting from the fact that the island of Borneo is little better known in Europe at the present day, than it was three centuries ago.

Notwithstanding their friendly reception, the Spaniards were soon involved in hostilities with the natives, and shortly after left the place. The narrative of the voyage now begins to deal in the marvellous. At a certain island they found crocodiles and wild boars, and a tree, the leaves of which were animated even when they fell off; they were shaped like mulberry leaves, but longer; the petals were short and pointed, and on each side there grew two short feet. These leaf-animals shrunk from the touch. Such is the relation of one of the voyagers, Pigafetta, who assures us that he kept one of them in a box for the space of nine days, and when the lid was taken off, it trotted all round the box, and he was of opinion that it lived upon air. One part of the story is doubtless as correct as the other. We may add to this the account of two extraordinary pearls belonging to the king of Zolo, which "were as large as hen's eggs, and so perfectly round, that when placed on a smooth level table, they were never at rest."

In November, 1521, they reached the Moluccas, where they were well received by the "king of Tidore." They traded here for spices, and after a stay of a month or two, one of the ships set sail for home; the other, being damaged, was left behind. The Molucca pilots excited their wonder by marvellous stories of the people in that neighborhood. Some of them, according to their account, had ears so large that one of them served for a mattress to sleep on, and the

other for a coverlid. It does not appear whether the voyagers were so long-eared as to believe this, or another story of a tree on whose branches perched birds large enough to pounce upon buffaloes and elephants, and carry them away through the air. The Spaniards now made the best of their way to the Cape of Good Hope. In doubling that point they suffered great hardships; head winds kept them in the neighborhood of the Cape for nine weeks; their ship was leaky, their provisions ran short, and they lost of Spaniards and Indians twenty-one men. At length, after passing through additional dangers and adventures, they arrived at San Lucar, the port from which they had departed, on the 6th of September, 1522, after an absence of a little less than three years.

Thus was accomplished one of the most extraordinary and eventful voyages ever undertaken. The *Victoria*, as the admiral's ship was called, was the first vessel that sailed completely round the globe, and Fernando Magellan was the individual whose enterprise and perseverance first practically demonstrated the orbicular form of our planet. While the advancement of science shall continue to interest mankind, the name of this courageous navigator will not cease to be remembered with admiration and gratitude. In honor of the great discoverer, some geographical writers have proposed to call that great expanse of sea which he was the first to cross, the MAGELLANIC OCEAN, instead of the PACIFIC, but this attempt to change a long-established name does not appear likely to prove successful.

VOYAGE OF SIR FRANCIS DRAKE.

THE celebrated voyage of Sir Francis Drake into the South Sea, has been a subject of much controversy in regard to the justice of its object. England and Spain were at peace, yet Drake's expedition was fitted out for the express purpose of committing depredations upon the Spanish commerce and settlements in the Pacific Ocean. It is true that Drake had on a former occasion received some injuries from the Spaniards, he having been one of the companions of Sir John Hawkins, in his expedition to San Juan de Ulua in 1567; but he had subsequently made himself some amends by reprisals upon them. Drake, however, had with his own eyes seen that great object of men's ambition, the South Sea, and the golden dreams which the sight presented to his imagination, were a stimulant not easily to be resisted by a man of his enterprising and adventurous spirit.

Notwithstanding the piratical character of this undertaking, it was connived at, if not patronized, by Queen Elizabeth, and whatever blame on account of it rests upon the shoulders of Drake, is shared equally by his sovereign. The vessels employed belonged to private individuals; they were five in number, the largest was only 100 tons' burthen, and the smallest was but a pinnace of 15 tons. They carried 164 men, and were furnished with arms and stores for a long voyage, together with the frames of four pinnaces in separate pieces, to be put together as occasion might require. During the outfit, pains were taken to con-

veal their destination, and it was given out that they were bound for Alexandria. The smallness of this force for an enterprise of such magnitude, is not so extraordinary as the fact that a navigation, which on account of its difficulties and dangers, had been for many years discontinued, should be undertaken in vessels so diminutive. Scarcely had they got to sea on the 15th of November, 1577, when they were overtaken by a violent gale, which compelled two of them to cut away their masts and return to port. Having re-fitted they set sail from Plymouth a second time on the 13th of December. The crews, it would appear, knew nothing of their destination; for as soon as they were out of sight of land, the commander appointed as a place of rendezvous, in case the fleet should be separated, the island of Mogadore on the coast of Morocco, by which the crews began to conjecture that they were bound for the South Sea.

Having touched on the coast of Barbary and at the Cape Verde Islands, Drake steered across the Atlantic, and in May, 1578, arrived on the coast of Patagonia. Some of the natives were seen, and the English made signs to them by waving a white cloth. They answered by gestures and speech, but kept at a distance. In a rocky place on the shore, were found above fifty ostriches, besides other birds, dried or drying for provisions. The thighs of the ostriches were equal in size to "reasonable legs of mutton." These provisions with a bag containing small stones of various colors, the English carried on board the ships. The natives afterwards became familiar and friendly, and the English had the opportunity of observing their

manner of hunting the ostriches. They decoyed them with bunches of feathers fixed on the end of a staff, the fore part being made to resemble the head and neck of an ostrich, behind which they hid themselves and moved towards their game till they could manage to drive or allure them within some neck of land near the sea-side, across which they spread large and strong nets to prevent their return, and then set their dogs upon them.

At Port San Julian, Drake caused Thomas Dough-tie, the gunner of his ship, to be tried and put to death, on a charge of conspiracy. This occurrence has been left much in the dark by all the original narrators of the voyage, and it is considered as having affixed a stain upon the memory of the commander. One of the ships being found unserviceable, was broken up on the coast of Patagonia. The remainder entered the Straits of Magellan, and reached the South Sea on the 6th of September. They coasted the American shore, and put into the island of Mocha, where a watering party from the ships fell into an ambuscade of the Indians, and they were obliged to leave the place. Sailing farther onward, they came to the Bay of Valparaiso, where they made prize of a Spanish ship laden with Chili wine and other merchandize, together with 60,000 dollars in gold, besides a quantity of jewels. They also plundered the town, and stripped the church of its silver ornaments. Farther to the north they landed at a place called Tarapaca, and while they were looking about for water, they discovered a Spaniard lying on the ground asleep, and near him thirteen bars of silver of the value of 4000 ducats, which they

did not scruple to take. A small distance from this spot, they again landed, and met a Spaniard and an Indian driving eight llamas, each laden with a hundred pounds' weight of silver. The English seized both beasts and treasures, and conducted them to their boat.

On the 7th of February, 1579, they arrived at Arica, where two Spanish ships were lying at anchor, from one of which they took above forty bars of silver, "of the bigness and fashion of brickbats,"—in weight about twenty pounds each; and from the other, 200 jars of wine. The next morning they sailed in pursuit of a ship which they were informed was not far before them, and richly laden. They found her at Arequipa, lying at anchor, but she had received notice of the arrival of the English on the coast in sufficient season to land 800 bars of silver. This vessel and two others of their prizes they discharged here, by first setting all their sails, and then putting them before the wind with no person on board. Proceeding northward, they reached Callao, the port of Lima, where they found a dozen ships, but little plunder. They gained intelligence, however, that a ship called the *Cacafuego*, laden with treasure, had sailed a few days previous for Panama.

Drake ordered all the ships in the port to be disabled that they might not pursue him, and then sailed in chase of the *Cacafuego*. On the cruise he captured a ship laden with cordage and ship's stores, and on board of which the English found eighty pounds' weight of gold, and some other treasure. On the first of March, off Cape San Francisco, they came up with

the object of their pursuit, which they captured without any difficulty. They found on board of her gold, silver, and precious stones, to the value of 730,000 dollars, all which was transferred to the admiral's ship; the other vessels having been for some time separated from him. They had now accomplished the main purpose of their expedition, and their thoughts began to tend homeward. But the season was unfavorable for the passage round Cape Horn; and there was reason to apprehend that the Spaniards would station ships there to intercept them on their return.

Drake, therefore, resolved to attempt the discovery of a passage to the Atlantic round the northern parts of America. He accordingly steered in that direction along the coast, and made prize of several vessels on the way. By the 4th of June they had reached the 42d parallel of latitude, where they found the weather excessively cold, and two degrees further, their meat was frozen as soon as removed from the fire. They coasted along to the 48th degree, and found all the hills covered with snow. This description of the western coast of America by no means agrees with the present state of the climate in that quarter.

The English held intercourse with the natives, and one of the chiefs in the course of a ceremony placed a cap of feathers on the head of the admiral, which the English interpreted to mean that he had invested their commander with the insignia of royalty, and that the natives had "with true meaning and intent," resigned to him their right and title to the whole country, and made themselves and their posterity his vassals!

The summer was now thought too far advanced for pursuing the original plan, and the wind blew strongly from the north-west; for which reasons the design of seeking a passage to Europe to the north of America, was given up; and it was determined to quit the American coast and steer for the Molucca Islands. Drake, therefore, shaped his course westerly, and sailed sixty-eight days without seeing land. On the 30th of September he fell in with some islands which appear to have been the Philippines or some group in the neighborhood. The inhabitants showed a thievish disposition, and the English held little intercourse with them. November 30, they arrived at Ternate, one of the Moluccas, where they were received in a very friendly manner. They remained in this quarter till the 12th of December taking in spices, and then set sail for the Cape of Good Hope.

On the 9th of January, while going under full sail in the evening, the ship suddenly struck upon a rock. They threw overboard three tons of cloves, eight of their guns, and other articles to lighten her, but without effect. At only a boat's length from the ship, no bottom could be found with all their lines, and it was impossible to lay out an anchor to heave her off. The destruction of the ship appeared inevitable, and every man resigned himself to his fate. But when they least expected it, in the afternoon at low water, the wind suddenly died away, which caused the ship to fall off toward the deep water, by which movement she was again set afloat without any injury. The remainder of the voyage offers nothing worthy of

record here. The expedition arrived safely at Plymouth on the 25th of September, 1580.

Drake immediately repaired to court, and was graciously received by the queen; but she commanded that the treasure which he had brought home should be put under sequestration, that if any demands were made by the Spaniards which it should be deemed expedient to satisfy, the means might be at hand. In fact, the English were compelled to restore a part of this plunder, but the remainder appears to have been divided among the captors. The queen, to show her approbation of Drake's enterprise, dined on board his ship at Deptford, and conferred upon him the honor of knighthood. The ship was preserved with great care for many years, and when at length she was quite decayed and broken up, a chair was made of one of her planks, and presented to the University of Oxford.

The conduct of Drake in this expedition is in many instances worthy of commendation. Among the praises which are due to him, the humanity with which he treated the Indians is not the least. To strangers, in general his behavior was affable and hospitable; towards the savages, his forbearance, and the various instances of his kindness, were the spontaneous effects of genuine good will. The purposes of discovery, or the advancement of science, were not among the motives of his voyage; but his running along the coast of North America to the height of 48 degrees, and endeavoring on that side to find a passage into the Atlantic, must be regarded as a strong proof of his skill and enterprise.

VOYAGES OF THE ENGLISH TOWARD THE NORTH POLE.



FROM the period of the discovery of America, and the advance of the English to maritime greatness, their views appear to have been steadily and zealously directed toward the discovery of a northern passage to India. In this attempt many of their most celebrated navigators acquired their glory. As soon as Cabot, Verazzani and Cortereal had ascertained the continuity of the American coast from the Gulf of Mexico to the borders of the Arctic Circle, there seemed, indeed, little ground to anticipate any very practicable northern route to the eastern world. Yet it is possible that even the hardihood of the undertaking conspired with the greatness of the object to which it related, to make it attractive in the eyes of a people to whom

such enterprises are congenial. The naval energy, the spirit of enterprise, the love of knowledge and adventure for which the English have been distinguished, have been greatly owing to the severe struggles which they have so long maintained with the tempests and the snows of the north.

The first expedition of the Cabots, like that of Columbus, had for its object, the western passage to India. After discovering Newfoundland, they sailed a considerable distance first to the north and then to the south, in hopes of finding an open sea leading westward,—but in vain. Not long afterward, the Cortereals, from Portugal, made a similar attempt; they sailed along the coast of Labrador, to which they first gave that name, and they seem to have visited, or at least looked into, some of the passages leading into Hudson's Bay; but they accomplished nothing more. The search by the English after a north-west passage did not commence seriously till the reign of Elizabeth. This princess however, unless when inspired by the hope of solid and immediate profit, was not apt to lavish her treasures. It was with Martin Frobisher that the plan of the expedition originated; and he spent fifteen years in soliciting, both in the city and at court, the means of equipping two little barks or rather boats of twenty-five tons each. With this paltry craft he did not hesitate in 1576, to face the tempests of the northern seas.

Frobisher spent three voyages in beating about the northern passes leading into Hudson's Bay, without discovering the main entrance into that wide sea. Entangled in these narrow channels, always filled

with floating ice, he passed through a singular series of disasters, and never made any approach toward the accomplishment of his favorite object. The zeal of the adventurers at home, however, was kept up by the discovery of a species of glittering mineral, then idly supposed to contain gold. Under this potent impulse the queen, who at first had given only smiles and courtesy, provided for the second voyage a stout ship of a hundred tons' burthen ; while the third expedition, consisting of eleven ships, carried out the wooden materials of a fort, and provisions for a permanent colony of a hundred persons. But this voyage was the most disastrous of the three. The vessels were dispersed, and the planks of the future fort were suspended from their sides to defend them from the crushing masses of floating ice. Every idea of a settlement was abandoned, and the vessels in a shattered state, returned to England.

These three fruitless attempts produced a painful disappointment. But the spirit of the nation again revived, and in 1586, a company of merchant adventurers sent out John Davis, who conducted three successive voyages with great discretion. He made it a particular study to conciliate the savage natives, for whose recreation he carried out a band of music, to which his crew danced as soon as any Esquimaux appeared in view. Davis penetrated through the broad strait which now bears his name, and in his third voyage reached its widest expanse, where there appeared an open sea stretching to the westward, whence he returned full of sanguine hopes. Three failures, however, had again exhausted the patience of

his patrons : they were heard to say, " This Davis hath made three voyages ; why hath he not found the passage ? " and he in vain solicited a fourth equipment.

Henry Hudson established a fame superior to that of any other northern navigator. He sought a passage first by the east, along the north of Asia. Then he projected a daring route *across the pole itself* : and lastly, when both these had failed, by the old route of the west. Thus he accomplished a signal discovery, by entering that great sea, improperly called a bay, which bears his name. This, however, was in his last voyage, in 1610, when the crew, stirred up to mutiny by a youth whom he had rescued from destruction, turned him adrift in a boat in these inhospitable seas, where he doubtless perished.

Notwithstanding the tragical issue of this voyage, it opened a prospect too important to be overlooked in that enterprising age. In the following year the adventurers sent forth Sir Thomas Button, an officer of merit. He entered Hudson's Bay, pushed directly across its broad expanse, and believed himself in full career to the South Sea, when suddenly there appeared before him, a long, unbroken barrier of coast, which forbade all farther advance. He named it " Hope Checked," and returned after spending the winter on that shore afterwards occupied by the Hudson's Bay Company. The adventurers, frustrated on this side, now determined to investigate thoroughly the sea entered by Davis ; and of which no limit had yet been reached. This task was committed to Baffin, who was accounted the most scientific steersman of the age. In 1616, he reached the northern shore,

situated in a very high latitude, and made the complete circuit of that sea which has since been named Baffin's Bay; but it appeared to him to be encircled by a continuous range of coast, nowhere affording a passage to any sea beyond. When he came to Lancaster Sound, which was afterwards found to be the entrance to the Polar Sea, his patience like that of Captain Ross, two centuries afterwards, seems to have been exhausted, and unluckily, at this very point he began to despair. He gave this important opening a very cursory examination, and returned to England declaring that the passage sought for had no existence. With Baffin terminated the early series of north-western discovery by the English, which had been maintained with so much courage and perseverance for forty years; and the question appeared to be now settled in a manner unfavorable to the long-cherished hopes of the nation.

An obscure veil still hung over the extremities of the Pacific and the junction of the continents of America and Asia. This was lifted by the exploratory genius of Cook. A premature fate indeed arrested that great navigator in the career of discovery; but he, and Captain Clerke, who followed in the path marked out by him, saw the two continents separated by Behring's Straits, and America stretching to the north and east. This voyage, by disclosing the immense breadth of the American continent in this latitude, made the hopes of a western passage darker than ever. That continent had hitherto been regarded as terminating to the north in a point or cape, after passing which the navigator would find himself at once in

the South Sea, and in full sail to China and Japan. Now, between the Atlantic and the Pacific, there was found to intervene a space of nearly three thousand miles. Geographers, viewing the coast running northward from Behring's Straits and Hudson's and Baffin's Bays, all enclosed by land, constructed their maps under the impression that an unbroken mass of land reached onward to the pole, and that all these regions were forever barred against the navigator.

But a new light broke in suddenly from an opposite quarter. The Hudson's Bay Company had formed a settlement with a view to the traffic in furs, for which this otherwise uninviting region afforded ample scope. They were bound by their charter to use their utmost effort for the discovery of the north-west passage, but it has been affirmed that their most strenuous exertions were directed to the prevention of any such result. They could not, however, prevent some efforts being made. Mr. Hearne, in 1769, followed northward the course of a river now bearing his name, till at a point then supposed to be in the inland depths of America, he came to the sea. Mackenzie, an agent of the Northwest Company at Montreal, afterwards proceeded in the same direction to a point twenty degrees farther west, where he followed another river also to the sea. This double discovery gave an entirely new aspect to the geography of Northern America. It now became probable, that, instead of unbroken lands stretching into the depths of the Polar regions, there was a continuous ocean bounding it at a latitude which did not absolutely preclude the hopes of an open and regular passage.

These important observations, however, did not take immediate effect on the public. They seem, on the contrary, to have lain dormant, silently fermenting in minds which meditated on these subjects, till, early in the present century, that remarkable exploratory zeal arose in England, of which the effects have been so important. Mr. Barrow, himself eminent as a traveller, gave the first impulse both to the nation and the government, which embarked in this career with a steadiness, judgment, and above all, an inflexible perseverance, of which there is no former example. Africa was the first theatre, but the northern seas, which Scoresby had already made an object of interest, soon attracted equal attention. This led to a series of enterprises which have remarkably enlarged our ideas of the geography of that part of the globe.

The first of the series was designed, under the conduct of Captain Ross, to make the circuit of Baffin's Bay, and look more narrowly than that navigator was suspected to have done, into every sound and inlet which could afford an entrance either into the Pacific, or the grand Polar basin. Captain Ross was an officer of merit, yet he was not altogether of that pushing and adventurous disposition which is requisite to find or force a way through these mighty barriers. He made the circuit of these shores like a skilful navigator, and brought a report confirming all the observations of Baffin, and coming to the same conclusion, that there was a bay only, affording no further passage. He had indeed looked into the wide entrance of Lancaster Sound, but at the distance of about twenty miles its shores appeared to the eye to meet and form an en-

closed inlet. But it was believed that Ross had not penetrated deep enough to form any sure judgment on this point; and Captain Parry, the second in command, was of opinion that the long sought-for passage would be found here.

The views of the British Admiralty coincided entirely with those of Captain Parry, whom they immediately sent out with the command of a fresh expedition in 1821. The result was the most brilliant success; Parry found all his predictions fulfilled, and through Lancaster Sound penetrated into the grand basin of the Polar sea. Here he coasted along, not the continent of America, but ranges of large islands which narrowed the sea through which he sailed, into a sort of broad strait, communicating by inlets with the sea beyond. These inlets were so blocked up with ice setting in from the westward, that Captain Parry in the course of two seasons vainly attempted to make his way through them, and was compelled to return with only the glory acquired by having penetrated so much farther than any former navigator.

The Polar basin having thus been ascertained to exist; another voyage was planned with the view of entering it by a different approach. Hudson's Bay had not yet been fully explored. Parry undertook the adventure, and in August arrived at the Frozen Strait, which had arrested Middleton in his voyage. He worked his way through it, and proceeded to the examination of the coasts beyond. He was soon interrupted by the setting in of the Arctic winter, and with some difficulty his crews sawed their way through the ice to a station in which the ships could pass that

rigorous season in safety. Next summer they proceeded northward along a large mass of land, in the latitude of 68° , which they named Melville Peninsula. At last they arrived at a strait, which by land surveys was found to lead into the wide and open basin of the Polar sea ; but it was so blocked up by ice driven into it by the western currents, that every attempt to penetrate it was wholly abortive. Parry was sent out a third time, on his first line of discovery, to make trial of a broad channel leading to the south, but this voyage failed, less from any absolute barrier opposed by nature, than from the loss of one of the ships which was so crushed by the ice, that it was necessary to abandon her. A fourth expedition was undertaken by Parry, in 1827, for the purpose of travelling over the frozen surface of the ocean, direct to the North Pole. They arrived within eight degrees of the Pole, the highest northern latitude probably ever attained by man, but in consequence of the drifting of the ice to the south, their progress was checked, and the object of the enterprise was defeated. Subsequent expeditions have been sent to this region, and it is now fully ascertained, that the Atlantic and Pacific are united by a passage to the north of our continent.

VOYAGES OF THE DUTCH TOWARD THE NORTH POLE.

THE first attempts to discover a north-eastern passage to India, around the northern parts of Russia,

were made by the English. An expedition under Sir Hugh Willoughby, sailed from London in 1553. They doubled the North Cape, and coasted along the country for some distance beyond. The fleet consisted of three ships. Two of them put into the harbor of Arzina in Lapland, in September, and were afterwards found by the Russian fishermen with the unfortunate crews all frozen to death. The other ship, commanded by Richard Chancellor, reached the White Sea, where Chancellor landed, and travelled to Moscow. The Czar treated him with kindness and distinction, and in consequence of this discovery or first accomplishment of the route by sea from the Atlantic to Archangel, he granted large and extensive privileges to the English nation, which were enjoyed many years by the English Russian Company. Three years afterwards, Stephen Burrough, an Englishman, passed through the strait of Waigatz, between the continent and Nova Zembla, which was then well known to the Russians; but the discoveries of the English were not prosecuted any further in this quarter.

The next attempts worthy of notice were made by the Dutch, in a series of voyages undertaken in three successive years. The merchants of Holland determined to participate in the advantages of a direct trade with India, which the nations of Europe had hitherto left exclusively in the hands of the Spaniards and Portuguese. The passage to India by the north-east appeared greatly preferable to that by the Cape of Good Hope, as in addition to the shortness of the route, should it be found practicable, there would be no dan-

ger of meeting their rivals in the trade, which at the commencement of the undertaking it was highly desirable to avoid. Permission to discover a way to India by Nova Zembla, and along the coasts of Tartary, was readily obtained of the States General, who took so great an interest in the enterprise, that they promised a gratuity of 25,000 florins to any persons who should successfully accomplish the voyage, and also special privileges of trade for eight years.

The first expedition was undertaken by three ships, and a fishing bark, under the command of Nay, Linschoten, and William Barentz, the latter of whom was a seaman of great reputation. They sailed from the Texel in June, 1594, and arrived on the coast of Lapland where they separated. Barentz explored the western side of Nova Zembla; the others proceeded through the Straits of Waigatz, about 40 leagues to the eastward, when finding the sea clear and every prospect of a passage, as they thought to India, instead of pursuing the discovery, they returned to Holland to publish the news of the happy probability! Barentz sailed as far north as the extremity of Nova Zembla, which he named *Ys Hoek*, or Ice Cape. But vast impenetrable bodies of ice hindered him from ascending any farther.

Another expedition of seven ships was despatched in the same direction, but with no better success. A third attempt was made in 1596, which though unsuccessful in the main object of the undertaking, exhibits such a degree of courage, perseverance and fortitude in the crew, and was attended by so many adventures and extraordinary sufferings, that we shall

offer some details respecting it, as in all the narratives of maritime adventure, there is nothing which surpasses it in interest. This expedition consisted of two small vessels, under the command of Jacob Heemskirk, and Cornelius Ryp, with William Barentz for chief pilot. They sailed from Amsterdam on the 18th of May, and on the 22d came in sight of the Shetland Islands. Barentz here proposed to steer for the Icy Cape, but the commander preferred standing further to the north, in hopes of getting clear of all the known land in that quarter, and finding a clear sea which would admit of their sailing to the east. About the latitude of 74° they discovered an island on which they killed an enormous bear, from which circumstance they gave it the name of Bear Island. Steering farther to the north, on the 17th of June they discovered land in the latitude of 80° . From its general appearance they bestowed upon it the name of Spitzbergen, or "Sharp-pointed Mountains." They killed here a white bear, whose skin measured 13 feet in length. He swam to the ships but was driven off, and endeavoring to escape to the shore was interrupted by one of the boats, and pursued a league out to sea. He made great resistance before he was overcome, and at one time laid his paw on the boat, fortunately at the bow, for had it been in the middle, he would inevitably have overturned her.

On the 23d of July, they weighed anchor and attempted to stand to the northward, but were so obstructed by the ice, that they were driven back to Bear Island. Here they differed about their future course. Ryp with his vessel proceeded to the western coast of

Spitzbergen, Heemskirk on board of which vessel was Barentz, steered east, and on the 17th of July, made the land of Nova Zembla. On the 9th of August, while the vessel was moored to the ice, the master, who was walking on deck, heard the breathing of an animal, and immediately beheld a bear attempting to climb on board. He cried "All hands on deck!" and the crew hastening up, set up as loud a shouting as they could, by which the bear was frightened for a moment and retreated to a little distance. But returning immediately, he ran furiously toward the vessel, set his claws against her side, and attempted to enter. In the mean time the crew had stretched a sail over the upper-works, and prepared their firelocks. A heavy snow was falling, so that they could not take aim distinctly, but they fired and wounded the bear, who then took to flight.

By the 16th of August, they had advanced no further than the north-eastern extremity of Nova Zembla. Obstacles now thickened in their way. The coast here took a direction south-easterly, and the sea at first appeared open in that quarter, which gave them some hopes of a free passage, but this delusive appearance was soon at an end. The floating ice began to close around them, and on the 26th of August they were driven into a bay on the north-eastern coast, where they soon found themselves fast locked up in the ice, in about the 76th degree north latitude, with the winter fast approaching.

The crew then held a council and came to a unanimous conclusion, that there was no hope of getting away that winter, and that their only resource was to

build them a hut and winter on shore. Luckily, although Nova Zembla produces no trees, much drift wood was found upon the shore, which had doubtless come from the coast of Tartary or Russia. They immediately began to build a hut, in which labor they were constantly interrupted by the bears, whom they kept away with great difficulty and danger. By the middle of September, the sea was completely frozen over, but a few days after, a westerly wind broke up the ice and made an open sea. Their vessel, however, not being disengaged, they could only look upon this chance of escape with vexation. On the 27th it froze so hard that one of the crew being at work, put a nail in his mouth, and drawing it out, the skin came away, and blood followed. The cold soon became so intense, that it was only the extreme desire of preserving life which could have enabled them to support the hardship of their labor. On the 30th of September, so much snow fell that they were prevented from going in quest of wood. They made a great fire along the building to thaw the earth, and raise a rampart of it around their hut, but this was found impossible.

One of the bears which they had shot, they designed to carry to Holland; and accordingly, they set him upon his legs at a little distance from the hut, where he became frozen stiff. One day a sailor being on shore, came suddenly upon a bear. He turned back and fled in all haste toward the vessel. The bear pursued him till he arrived at the spot where the frozen bear had been placed, and who was completely covered with snow except one of his paws, which was

lifted high in the air. Here he stopped, gazing with astonishment at so strange a sight. This enabled the sailor to make his escape to the vessel; but being very much frightened, he could utter nothing but the words "A bear! a bear!" The other sailors ran upon deck, but could see nothing on account of the smoke with which the vessel was filled, while they were shut up in it. Fortunately, the bear did not wait till they got their eyes clear, but retreated immediately.

On the 11th of October they began to convey their provisions ashore, and took possession of the hut. The bears continued to annoy them while they were at this work, sometimes driving the sailors up the rigging, but they generally took to flight at the first shot fired against them. The sun-light now began to abandon them. On the 25th of October, three bears suddenly made their appearance close to the vessel, and ran toward the sailors. The master set up a loud shout to frighten them; the men, who were engaged in hauling goods to the hut, threw down their ropes and put themselves in such a state of defence as they could; but the only weapons at hand were a couple of halberts. The master took one and Gerard de Veer the other. The men ran toward the vessel, but one of them fell into a chasm in the ice, which made the rest shudder, as they thought the bears would inevitably devour him. However, they passed by him and pursued the sailors to the vessel. Here they commenced a most furious attack, being kept at bay only by the two halberts. The men endeavored to divert their attention by throwing pieces of wood and other things at their heads; for they ran each time a piece

was thrown, as a dog runs after a stone. One of the sailors went into the cook-room to strike a fire, and another to seek for some pikes. But such was the trepidation of all, that no fire could be kindled, and the match-locks were of no use. The bears constantly returned to the assault with the utmost fury; but at length one of the halberts was thrown, which struck the largest directly on the mouth, on which he slowly retreated and was followed by the others.

After the sun had quitted the horizon, the moon took its place appearing all day and night without setting when it was in its highest quarter. By the 6th of November, the day could not be distinguished from the night, and the men lay a long time in bed, knowing nothing of the lapse of the hours. Foxes now began to appear in great numbers, and they took many of them in traps. In the latter part of November there fell so prodigious a quantity of snow that they were completely buried; the storm lasted three days, and it was only after much labor that they dug their way into the open air. The snow covered even the chimney top, so that they were unable to cook any victuals on account of the smoke. One day, while in their beds, they heard the ice of the sea crack with so horrible a noise, that they imagined the mountains of ice which they had seen during the summer, had become loose and were crushing against each other. It now froze so hard in the hut that the floor and walls were coated with thick ice, and even their beds were in the same condition.

On the 6th of December, the cold was so intense that they began to feel great alarm, believing them-

selves unable to support their sufferings much longer. All the fire they could make was insufficient to warm them, and they gazed upon each other with looks of despair. Their sherry wine had frozen solid, and they were obliged to thaw it on the days of distribution, which was performed every other day, when each man had half a pint; after the wine was out, they had no drink but water, their Dantzic beer having been spoilt by freezing, early in the season. On the 7th, the intense cold continuing, they determined to fetch from the vessel a quantity of the pit-coal which was on board, thinking it would afford a greater heat than wood. They accordingly made a large fire of it in the hut, and felt much enlivened and relieved by the warmth which it imparted. But within a few hours they all found themselves attacked with vertigoes and swimings in the head, with violent pains. Not a man of them was able to stand up; but at length one person succeeded in crawling to the door and opening it. No sooner had he done this than he fainted and fell down in the snow. One of the company whose head was near to the door, threw some vinegar in his face, and brought him to himself. The opening of the door saved their lives, as without this they would all soon have been suffocated.

On the 9th, 10th, and 11th of December, the weather was fine and clear, and the sky bright with stars; but the cold had augmented to an inconceivable degree. The leather of their shoes froze on their feet as hard as if it had been horn, so that they were of no service. They attempted to keep their feet warm by wearing three or four pairs of socks, one over another, outside

of which they placed a covering of sheep-skin. Their clothes were now all white with frost and ice, and they could not venture out of doors without freezing their faces and ears. Fire now seemed to cause no heat, and when they attempted to warm their feet by it, their stockings were burnt without their feeling any warmth. For several days together, they were completely snowed in; but on the 5th of January, 1597, they cleared the snow from the door, and brought into the hut a fresh supply of wood for fuel. This being Twelfth-day, they celebrated it by indulging in uncommon luxury, and cooked some fritters with oil, which they ate with as good an appetite as was ever possessed by a burgomaster of Amsterdam. They even went through all the ceremonies of the feast, drawing tickets according to the usual custom, and the gunner was king of Nova Zembla.

January 13th, the weather was clear and serene, and they perceived that the feeble light of the day began to increase, for on throwing a ball upon the snow they perceived it to roll, which they could not do before. From this time they went abroad every day and exercised themselves with walking, running, throwing, &c., in order to revive their limbs. They also remarked a degree of redness in the horizon, which was to them an aurora, or harbinger of the sun. There were some appearances of thawing during the day inside their hut, but at night it froze as hard as ever. On the 26th, one of the company who had been feeble for a long time, died; they dug a grave seven feet deep in the snow, where they buried him.

The first seven days of February were exceedingly stormy, so that they began to despair again, for, trusting to the fine weather, they had neglected to provide a large stock of fuel. The hut was again surrounded with great heaps of snow, and the fog was thicker than ever. They were compelled to go out and in by the chimney. The sun rose in the S. S. E., and set in the S. S. W. On the 13th, while occupied in putting their traps in order, they saw a great bear running towards them, on which they all fled to the hut. One of them fired at him; the ball struck the bear in the breast, passed quite through his body and came out near the tail; it was found afterwards as flat as a half-penny. The wounded bear made a great leap and retired twenty or thirty feet, when he fell. Those who pursued him found him still living; and he raised his head as if to see who had shot him. As they had already too fatally experienced the enormous strength of those animals, they did not trust to the first shot, but despatched him with two others. His skin was nine feet long, and seven wide; and they obtained from him above a hundred pounds of fat, which enabled them to keep a lamp burning, a luxury they had not enjoyed for some time.

Their wood now began to fail them, and the wind, cold and severe, caused them intense sufferings for many days. The ice began to break up, and by the 8th of March, all the sea to the north-east appeared to be open, so that they took courage. But on the 14th, a wind from the E. N. E., set in so violent and cold, that the sea was again frozen as hard as ever. This severe weather occasioned those to re-

lapse who, having been ill and growing better, had exposed themselves during the milder season. From this day the cold continually increased, and was even greater and more insupportable than before. Such unexpected severity of the weather dispirited the crew, and destroyed all their hopes of an early thaw.

During the night of the 6th of April, a bear approached the hut, and notwithstanding their endeavors to kill him with their muskets, they were not able to take aim on account of the darkness and the fog ; their powder, besides, was so damp that the guns almost always missed fire. The bear descended the steps in the snow, leading to the door, and attempted to enter ; but the master, placing himself firmly behind it, kept it so well closed, that the animal after many attempts, at length retired. But in two hours he returned again and climbed to the top of the hut, where he made so dreadful a roaring as to fill them all with terror. He then advanced toward the chimney and made great exertions to overturn it. They were now in a dreadful alarm, for it appeared certain that he would get into the hut. But fortunately, after tearing the sail with which the chimney was surrounded, and making extraordinary ravages, he went away.

Again the ice disappeared, leaving an open sea ; but shortly after, a north-east wind brought it back again, and the weather once more became dreadfully cold. They went down to the shore and viewed the mountains of ice which covered the sea, and which appeared disposed like the houses of a great city, with towers, steeples, domes, bastions and ramparts. On the second day of May, a south-west wind cleared the sea of ice,

so that their hopes of a speedy departure for home again revived. But by this time their best provisions, as their meat, flour, oatmeal, &c. were nearly exhausted. They had only a supply of bacon for three weeks, at the rate of two ounces a day for each man. The bears which now attacked them were more easily driven away than formerly, appearing to have grown comparatively timid. The sun, when at the lowest, was at a considerable height above the horizon. Snow fell again on the 5th of May in such abundance as to confine them to the hut; and on the 20th and 21st, a north-east wind again covered the sea with ice.

Notwithstanding this, the master ordered preparations to be made for departure. On attempting to remove the boat which they had drawn on shore at the beginning of the winter, they found themselves unable from weakness, to draw it over the snow. They now fell into the deepest despair, and imagined they were destined to end their days in that frightful climate. The master endeavored to cheer them on in their work, telling them that unless they were willing to become citizens of Nova Zembla, and very soon to prepare their own graves there, they must recover the boat, as all their hopes of escape depended on it. While they were repeating their attempts they discovered an enormous bear coming towards them. They all ran into the hut where they waited at the three doors with their firelocks, and one of the men mounted the chimney with a musket. The bear advanced with great fierceness and approached the declivity of the steps of one of the doors, where he was not perceived by the man on guard there, who happened

to be looking toward the other door. Those within seeing the bear, cried out for him to take care of himself. The man turned his head, and notwithstanding the fright he was in, he fired his gun ; the bear was wounded and fled. This was by far the narrowest escape which they had experienced, and the consternation of the people in the hut was indescribable, for when the man first perceived the bear, the ferocious beast was within a few feet of him, ready to spring upon him. Had the gun missed fire, as often happened, the bear would have entered the hut and devoured them all at his leisure. In the mean time the wound which he had received prevented him from going to a great distance, and when they perceived him to stop, they ran after him and despatched him with their weapons. In his stomach were found pieces of sea-dogs entire, with their skin and hair on, which showed that they had just been devoured.

The next day came another bear, which they soon killed. The following day another made his appearance. It seemed as if these animals had a suspicion that their prey was about leaving them, and that they must make the most of their time. The last bear forced them to quit their work and fly for safety to the hut. Their assailant followed them, and was received with a volley of three muskets, one from the chimney, and the others from the doors. The shots all took effect, and the bear was killed. But this victory was near costing them dear, for having cut the beast in pieces, they cooked the liver and ate it with a keen appetite, which made them all sick. Three of them were very

near dying, but recovered with the acquisition of a new skin from head to foot.

By the beginning of June, they regained sufficient strength to drag their boat to the sea. They were still incommoded by violent storms of snow, hail and rain, which last they had not beheld for a long time. On the 12th, while engaged in their labor, they were interrupted by a huge bear, lean and scraggy, coming in from the broad ocean on a piece of ice, and which they conjectured to have come from Tartary, because they had met with them formerly, at the distance of twenty or thirty leagues from the land in that direction. As they did not expect such an adventure, only the surgeon had a gun, and De Veer was obliged to quit the men and run to the vessel for more arms. The bear seeing De Veer leave the rest of the company, ran after him, and would have overtaken him if the others had not fired to prevent it. The report of the musket caused the bear to turn his head; the surgeon loaded and fired a second time. The bear was wounded and began to run away, but being hindered in his flight by great cakes of ice, several other shots were fired at him and he was killed.

About the middle of June, the weather was fine, and the vessels were set afloat. Barentz wrote a memoir stating the circumstances of their departure from Holland, and all their adventures on the voyage down to their departure from Nova Zembla. This writing he placed in a gun-barrel and hung it in the chimney of the hut, for the information of any one who should afterwards visit the place, and to preserve the knowledge of these events in case they should be

lost on their return to Holland. On the 14th of June, 1597, the crew all went on board and they set sail, having rigged the pinnace as a consort.

Barentz had for some time been in a declining state of health. At Icy Cape, Heemskirk enquired of Barentz how he found himself; he replied that he was better, and had hopes of surviving till they reached home. He asked if they had reached Icy Cape, and being answered in the affirmative, he desired to be lifted up that he might behold that promontory once more. For this he had sufficient leisure, as they were here beset with ice for several days. They received such frightful shocks from masses of ice that the men gave themselves up for lost, and took what they believed to be their last farewell of each other. The vessels were severely damaged, and they were obliged to disembark everything on board and haul them on the ice, where they repaired and caulked them. The ice now increased, and on the 20th of June Barentz died; another of the crew followed him within a few hours. The death of Barentz was a great loss and much afflicted the men, as he was an expert pilot, and they all had great confidence in him.

They now continued their navigation, dragging the vessels at times across the ice from one channel to another. Storms and fogs exposed them to perpetual hazards. On the 27th of June they reached a spot on the western coast of Cape Nassau, where sailing along the land they beheld on the ice an innumerable multitude of sea-cows. They also observed a flock of birds, of which they killed a dozen. On the 28th, they again disembarked their cargoes upon the ice, expect-

ing every moment to see the vessels dashed in pieces by a furious gale which was blowing from the sea. They made tents of their sails on the ice, and lay down to repose from their exhausting fatigue, leaving one man as a sentinel. About midnight they heard the sentinel cry out "*Three bears! three bears!*" At this noise they all started up and ran out with their muskets, but these happened to be charged with only small shot for birds. Nevertheless, the shots checked the approach of the bears, and they had time to load and fire again. One was killed and the other two fled. These returned the next day to the place where the dead bear was lying, and one of them took him by the throat and carried him off to a considerable distance over very rugged ice, where both began to eat him. A musket was fired, which drove them off, and the men going to the place, found that in the short time they were about it, they had already devoured half the body of their comrade. They were amazed at the strength of the bear which had carried him away by so rugged a path, since these four men had great difficulty in lifting the remaining half.

Two days after, these two bears again approached them on a cake of ice, and appeared disposed to attack the crews, but refrained. A few hours after this, another was seen coming over the firm ice, but he was frightened away by shouting. At dawn the following day, another bear came on the drift ice, who plunged into the water and swam toward the crews, but they again set up a loud shouting and drove him off. About nine in the forenoon the floating ice from the sea struck with such violence against the firm

ice, that the part where the men had retired with their vessels was crushed to pieces, and the vessels were set afloat. This was a great calamity, for all their packages were on the ice, and the greater part fell into the water. Many of them were lost, and the vessels were greatly damaged. Such mishaps continually attended them, and they were constantly under the necessity of drawing their vessels over the ice, and of refitting them after hair-breadth escapes from destruction by the ice islands.

On the 11th of July, while on the ice with their vessels, a well fed bear advanced toward them from the water. When within about thirty paces, three muskets were fired at him, and he fell dead. The fat issuing from his wounds covered the sea like oil. Some of the crew paddled off to him on a cake of ice, and drew him on the firm ice by a rope. They measured his body and found him *eight feet thick*. On the 16th a bear came towards them from the land. At first they could not discover with certainty what it was, so much did his white skin glitter and resemble the snow. On his coming near they fired at him, and he ran off. The following day some of the crew wished to go to a neighboring island, to see if there were any channel through the ice. On their way they met with the wounded bear lying on the ice. As soon as he heard them coming he fled; but one of the men having given him a violent blow with a boat-hook, the iron of which entered his skin, he fell back on his hind paws. The man would have followed up the blow, but the bear broke the hook to pieces, so that he who had given the blow fell backwards in his turn.

The others immediately fired on the bear, which caused him to flee. The man who had fallen rose up, ran after him with the stump of the boat-hook and discharged several heavy blows on his body. The bear turned back each time, and leaped three times against the man who struck him. After several more shots the animal was killed.

Their voyage continued to abound with adventures and dangers of this sort, which are related with great simplicity and minutness in the narrative. They proceeded along the coast as well as the ice and weather would permit them, and on the 28th of July, they had the good fortune to meet with two Russian vessels, from whom they obtained a supply of provisions. They also learned that three Dutch vessels were lying at Kola on the Russian coast. After a fatiguing navigation, on the 25th of August they arrived at Kilduyn, where in a few days to their great joy they were joined by one of these Dutch ships, commanded by Cornelius Ryp, who had sailed with Heemskirk, and separated from him as above related. He had returned to Holland, and was now again homeward bound from a trading voyage to the White Sea. Heemskirk and his remaining companions embarked with Ryp, and they arrived at Amsterdam on the first day of November, 1597.

The journal of these courageous and persevering adventurers, during their cold, comfortless, dark and dreadful winter, is intensely and painfully interesting. No murmurings escape them in their afflicting and hopeless situation, but such a spirit of simple and true piety, and a tone of such mild and subdued re

signation to Divine Providence, breathe through the whole narrative, that it is impossible to read the tale of their sufferings, and contemplate their forlorn and appalling situation in that frightful climate, without the deepest emotion.

SPANISH AMERICAN COMMERCE.

THE commerce of the Spaniards with their South American colonies, was for a long time carried on across the Isthmus of Darien, to avoid the tedious and dangerous passage round Cape Horn. The chief seaport frequented for the purpose on the Atlantic side, was Porto Bello, a place possessing a most admirable harbor, but a noxious climate. This inconvenience, however, did not prevent Porto Bello from becoming the theatre of the richest commerce that was ever transacted upon earth. The gold, silver, and other productions of Peru and Chili were brought annually to that place from Panama, to be exchanged for the manufactures of Europe; and the Spanish galleons, or huge merchant ships, arrived there laden with every article of necessity and luxury. During the trading season Porto Bello, at other times a lonely and deserted spot, became suddenly filled with throngs of people, its harbor was crowded with ships, and the neighboring fields were covered with droves of mules laden with the precious metals. Instead of poverty, silence and solitude, nothing was to be seen in the streets and squares but bustling multitudes, bales of goods, and chests of treasure.

As soon as the galleons were unloaded, and the Peruvian merchants with the President of Panama arrived, they proceeded to arrange the business of the fair. For this purpose the deputies of the several parties repaired on board the admiral's ship, where the prices of the different commodities were settled in presence of the commander of the galleons and the President, the one representing the European Spaniards, and the other the Peruvians. The estimate was not adjusted by the intrinsic value of each article, but according to scarcity and demand; and the ability of the agents was shown in forming their combinations so judiciously, that the cargo imported from Europe should absorb all the treasure sent from Lima. It was regarded as a bad market when goods were found neglected for want of money, or when money was not expended for lack of goods. In the former case, and in that only, the Spanish merchants were permitted to visit the ports on the South Sea, and dispose of their articles; and in the latter, the Peruvians might make remittances to Spain for purchasers. The prices were no sooner settled than the traffic commenced. This was neither tedious nor difficult; it was conducted with that simplicity and confidence which accompany extensive dealings. No bale of goods was ever opened by the purchasers, no chest of treasure was examined. Both were received on the credit of the persons to whom they belonged; and these exchanges were made with so much honesty, that this liberal confidence was never abused. It happened not unfrequently that mistakes were made; chests of gold were found mixed with those of silver, and articles came to light in the

bales which were not entered in the invoice ; but all was faithfully and accurately accounted for on the return of the galleons. A single instance of fraud is on record. In the year 1654, all the coined silver brought from Porto Bello to Europe, was found to be adulterated by one fifth of alloy ; but the Spanish merchants, with their usual integrity, sustained the whole loss, and indemnified the foreigners by whom they were employed. The fraud was traced to its source ; the treasurer of the mint of Lima, the guilty person, was publicly burnt ; and the reputation of the Peruvian merchants incurred no stain.

The fair of Porto Bello was limited to forty days on account of the instability of the climate ; after which the galleons returned to Spain by the way of Cuba, often with cargoes of the value of twenty millions of dollars. By this commerce the influx of treasure from America into Spain became enormous, and one would naturally suppose must have rendered this country the richest in the universe. But Spain affords one of the many proofs that no country can be made rich by the precious metals, when industry and enterprise are wanting. Such a flood of treasure led to corruption in the government and indolence in the inhabitants. By the ambitious extravagance of Charles V. and the bigotry and imbecility of Philip II., the nation lost its energies and population and industry declined. The English and Dutch by their superiority in naval power, having acquired such a command of the sea as to cut off all communication between Spain and her colonies, the Spanish court, in order to furnish them with the necessaries of life, and as the only means of

receiving from them any portion of this treasure, departed so far from the usual rigor of its maxims as to open the trade with Peru to the French. Louis XIV. granted the privileges of this lucrative commerce to the merchants of St. Malo, who engaged in it with vigor, and carried it on upon principles very different from those of the Spaniards. They supplied Peru with European commodities at a more moderate price and in liberal quantities. The goods which they imported were conveyed to every province of Spanish America in such abundance as had never been seen in any former period ; and if this intercourse had been continued, the exportation of European commodities from Spain must have ceased, and the dependence of the colonies on the mother country would have been at an end. Pereimptory orders were therefore issued, prohibiting the admission of foreign vessels into any port of Peru or Chili, while a Spanish squadron was employed to clear the South Sea of all foreign intruders.

Though Spain obtained relief from one encroachment upon her commercial system, on the cessation of the war which was terminated by the peace of Utrecht, she was exposed to another hardly less threatening. As an inducement with Queen Anne, to conclude a peace, which France and Spain desired with equal ardor, Philip V. not only granted to Great Britain the *Asiento*, or contract for supplying the Spanish colonies with negroes, which had formerly been enjoyed by France, but granted the British the more extraordinary privilege of sending annually to the fair of Porto Bello, a ship of 500 tons, laden with Euro-

pean commodities. As a result of this contract, which was vested exclusively in the South Sea Company, British factories were established at Carthagena, Panama, Vera Cruz, Buenos Ayres, and other Spanish settlements; and the company was further permitted to freight in the ports of the Pacific, vessels of 400 tons' burthen in order to convey the negroes to all the coasts of Peru, and to bring back the produce in gold and silver. It may be easily understood what use was made of these important advantages by such an enterprising and commercial people as the English. The contraband trade was carried on with a facility and to an extent unknown in any former period.

This, however, was not the only effect of the Asiento upon the trade of Spain. The agents of the British South Sea Company, under cover of the importations which they were allowed to make by the annual ship to Porto Bello, poured in their commodities on the American continent without stint or limitation. Instead of a vessel of 500 tons, as stipulated by the treaty, they usually employed one twice as large. She was accompanied by three or four smaller vessels to supply her when her own cargo was sold out; and which, anchoring in a neighboring creek, furnished her constantly with fresh bales, undisturbed by the inspectors of the fair or the officers of the revenue, who, gained over by liberal bribes, connived at the smuggling. Thus partly by the operations of the British South Sea Company, and partly by the activity of private interlopers, almost the whole trade of Spanish America was engrossed by foreigners. The immense commerce of the galleons, once the pride of Spain and the

envy of other nations, sunk to nothing, and in 1748 the galleons were finally abolished after having been employed upwards of two centuries.

ENGLISH EAST INDIA COMMERCE.

THE successful voyages of Drake, Stephens, Cavendish, and others, who accomplished a passage to India, some by the way of the South Sea, and others by doubling the Cape of Good Hope, gave a stimulus to the enterprise of the English traders, and in the year 1600, a number of merchants belonging to London formed a company for the purpose of trading to the East Indies. An act of Parliament granted them this exclusive privilege for fifteen years. Such was the origin of the English East India Company, an institution without a parallel in the world; an association of merchants which dethroned kings, and exercised a sway over a territory equal to half the ancient Roman Empire for wealth and population.

The first fleet sent out by the company sailed in 1601. They visited Achen in Sumatra, which was then a great commercial mart. Thence they proceeded to Bantam in the island of Java, and the Moluccas. They returned to England with a rich lading of cloves, nutmegs, and pepper. This early success determined the company to form settlements in India. In a few years they acquired possession of a part of the Moluccas, which at that time passed for the most desirable territory in the Indies. It was not

long before they became embroiled with the Portuguese and Dutch, but the superior perseverance and enterprise of the English, enabled them in the end to gain the advantage. In 1686, they purchased a portion of territory on the coast of Coromandel and formed a settlement there.

But the most important step in the foundation of the British empire in India, was the conquest of the kingdom of Bengal. They had formed a settlement at Calcutta in this territory, with no greater expectations than to erect it into a trading factory. But chance, combined with the ambitious spirit and enterprising temper of the adventurers, opened to them a career of conquest so brilliant and astonishing that the individuals who were the main instruments in the work, had not at the outset the faintest conception of the magnitude and importance of their own achievements.

A pernicious custom had for some time prevailed in these countries. The governors of all the European settlements claimed the privilege of granting an asylum to such natives as fled to them to avoid oppression or punishment from their own rulers. This was a considerable source of wealth to these officers, as they received rewards in return for their protection, and in consequence, they overlooked the danger of this practice of screening fugitives from justice. One of the chief Indian functionaries of Bengal in this manner, took refuge among the English of Calcutta to avoid the punishment with which he was menaced for an act of treachery, and was formally taken under their protection. The Subah of the country, justly resenting this,

marched with an army, took Calcutta, and threw the garrison into a dungeon. In the burning climate of India, and crowded into a narrow space without ventilation, the miserable Englishmen endured all the horrors of suffocation. Their afflicting cries touched the hearts of the Hindoos who were keeping guard over them, but the Subah was asleep, and no person in Bengal dared to disturb his slumbers and request an order for the relief of the sufferers. In consequence, out of an hundred and fifty men, only twenty-three were found alive the next morning. Such was the tragical affair of what is called the Black Hole of Calcutta.

Admiral Watson who had just arrived in India with a British fleet, and Colonel Clive who had already distinguished himself in the war with the natives of the Carnatic, took immediate measures to avenge this outrage. They collected the English fugitives who were escaping from place to place, proceeded up the Ganges in December, 1756, retook Calcutta, made themselves masters of several other places, and gained a complete victory over the Subah. A success so rapid appears surprising; but the Subah from his tyrannical behavior had long been detested by his people, and his principal officers sold themselves to the English. He was betrayed at the head of his army, and he fell into the hands of his enemies, who caused him to be strangled in prison.

The English disposed of the sovereignty to the ring-leader of the conspiracy, who ceded to the company a portion of territory, with a grant of every privilege, exemption and favor to which they had any preten-

sion. The treasures which the English drew from the province they had acquired, soon enabled them to establish themselves firmly in the country, and in the course of the quarrels which ensued between them and the native princes, they gained conquest after conquest, and before long saw the mighty Mogul Empire within their grasp.

In the height of its power the East India Company held the control of a territory in the East, containing a population of more than sixty millions, and producing a yearly revenue of eighty millions of dollars. Their army amounted to 150,000 men, to which may be added a numerous and splendid civil establishment of governors, councillors, judges, diplomatic residents, collectors of revenue, &c. Their commercial capital in money amounted to fifty millions of dollars, in warehouses to five millions; in shipping to eighteen millions, and in other shapes to twenty-five millions. Their ships were navigated by a body of seamen amounting to nearly ten thousand, and they gave employment to a population of shipbuilders, carpenters, coopers, ropemakers, blacksmiths, sailmakers, &c., who with their numerous workmen for the last two centuries, formed regular establishments on the banks of the Thames, giving support to no less than fifty thousand persons; by whose united industry and wealth all those stupendous fabrics have arisen, which in their display and convenience, as docks, warehouses, and manufactories, contribute in so material a degree to characterize the port of London in its naval and commercial establishments, as the most opulent, extensive, and magnificent that exists in the world.

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The amount of commerce carried on by the company, was of course very great, as in addition to the trade between Great Britain and their own dominions, they possessed a monopoly of the British trade to China. Their charter was renewed by parliament from time to time, and their privileges underwent various modifications. At length in 1833, when the charter was renewed and extended to the year 1854, the monopoly of the China trade was abolished, and the company was restricted from carrying on any commercial operations on its own account, and was confined altogether to the territorial and political management of the vast empire which it has brought beneath its sway. The company's revenue now arises from land-taxes, customs, stamp-duties, subsidies, tributes from native chiefs, and monopolies of salt and opium. The revenue at present exceeds eighty millions of dollars, but their expenses of administration have much augmented, and their standing army now amounts to the enormous number of 224,000 men.

The government of the company is managed by a Board of Directors in London, chosen by a court of proprietors. These directors appoint a Governor General of India, and the Governors of the several Presidencies, but these appointments are subject to the approval of the crown. All subordinate officers are appointed by the Directors. The affairs of the company are subjected to a species of supervision by a Board of Control, nominated by the King or his cabinet; and the President of the board, is, in effect, a Secretary of State for the affairs of India.

COMMERCE OF THE NORTH-WEST COAST OF AMERICA.



CAPTAIN COOK's third voyage having brought to light several countries of which little or nothing was previously known, several enterprising persons in England, allured by the hopes of a profitable traffic with the natives of the north-west coast of America, engaged in voyages to that quarter as early as the year 1784. The people of the United States, then just recovering from the entire prostration of their

commerce, by the revolutionary war, and possessing more enterprize than money, were not slow in perceiving the benefits likely to result from a participation in this branch of trade, where industry and perseverance could be substituted for capital.

In 1787 two vessels were fitted out at Boston, the ship *Columbia* of 300 tons, and the sloop *Washington* of 100, the former commanded by John Kendrick,* and the latter by Robert Gray, since known as the first navigator who entered the *Columbia* river. These vessels were owned by an association of Boston merchants, and having been furnished with sea-letters under the authority of Congress, and passports from the authorities of the State of Massachusetts, they sailed from Boston on the 30th of September, 1787. Each vessel took out for distribution among the natives, a number of medals struck for the purpose, bearing on one side the figure of a ship and a sloop under sail, with the inscription, "*Columbia and Washington, commanded by J. Kendrick,*" and on the reverse, "*Fitted out at Boston, N. America, for the Pacific Ocean, by J. Barrell, S. Brown, C. Bulfinch, J. Darby, C. Hatch, J. M. Pintard. 1787.*"

They both arrived safely on the north-west coast, where they prosecuted their trade, and were shortly followed by other vessels. The officers entrusted with the management of these voyages, soon acquired the necessary local knowledge to maintain a competition with

* It is remarkable that this adventurous navigator was afterwards killed, like Captain Cook, at *Owhyhee*, by the natives. This happened in 1793.

the traders of other nations, mostly English, who had preceded them. The habits and ordinary pursuits of the New Englanders, qualified them in a peculiar manner for carrying on this trade, and the embarrassed state of European politics which presently followed, combined with other circumstances, gave them in the course of a few years, almost a monopoly of the most profitable part of it. As early as 1801, there were sixteen ships on this coast, engaged in the fur trade, fifteen of which were American, and one English. Upwards of 18,000 sea-otter skins, a most valuable fur, in addition to other furs, were collected for the China market in that year, by the American vessels alone. Of the profits of this trade we may form some estimate, from the fact that in a single instance, the proceeds of an investment of 9000 dollars, in a voyage of about eight months, were sold in China for 60,000 dollars.

From this period, however, the trade began to decline, the sea-otter which is the principal object of pursuit, having become scarce, in consequence of the impolitic system pursued by the Russians, as well as by the natives, who destroy indiscriminately the old and the young of this animal, which will probably in a few years be as scarce on the American coast, as it now is on that of Kamtschatka, and among the Aleutian Islands, where they abounded when first discovered by the Russians. The trade to the north-west coast was then combined with that to the Sandwich Islands, which was carried on to a considerable extent in sandal-wood. These vessels were usually about three years in completing a voyage. After trading

with the natives on the coast for furs, by exchanging with them such parts of the cargoes as were adapted to the wants, or suited to the fancy of these people, the ships resorted to the Sandwich Islands, where a cargo of sandal-wood was prepared, with which, and their furs, they proceeded to Canton, and returned to the United States with cargoes of teas, &c. The north-west coast fur trade is no longer carried on by American vessels, which have been completely excluded from that quarter, by the prohibitory measures of the Russians, and the activity of the Hudson's Bay Company.

The American posts west of the Rocky Mountains are now few and small. Nearly all their furs are procured directly by their own hunting and trapping, as they trade but little with the Indians, whom the agents of the Hudson's Bay Company take care to keep in a state of hostility towards them. The hunters and trappers who remain constantly in that country, are about three or four hundred in number, most of them whites. In the summer of each year they repair, carrying with them furs on pack-horses, or on their backs, to certain places of rendezvous, where they meet the caravans from the United States, and the trade is then conducted without the use of money, each article, however, bearing a nominal money value. These conventional rates are sometimes curious. Among the prices current, we find whisky quoted at three dollars a pint; tobacco at five dollars a pound; gunpowder at six dollars a pint; dogs—for eating—at fifteen dollars each. The principal places for rendezvous are on Green River, a branch of the Colorado, at

the foot of the Rocky Mountains on the western side, and Pierre's Hole, a valley about a hundred miles north of this, from which issues one of the eastern head waters of the Oregon. Both these places are near the sources of a branch of the Platte, along which lies the route of the caravans to and from Missouri.

COMMERCE BY CARAVANS.



THE original dwelling of the human race, as is well known, was in the mild and fertile regions

of the east. The career of human improvement also began in this quarter; and from the remains of sciences which were anciently cultivated in India, we may conclude it to be one of the first countries in which was made any considerable progress in that career. The wisdom of the East was early celebrated, and its productions were accordingly in request among distant nations. The intercourse, however, between different countries was, as we have already remarked, carried on, at first, entirely by land. As the people of the east appear soon to have acquired dominion over the useful animals, they could early undertake the long and toilsome journeys which it was necessary to make in order to maintain this intercourse; and by the provident bounty of Heaven they were furnished with a beast of burthen, without whose aid it would have been impossible to accomplish them. The Camel, by its persevering strength, by its moderation in the use of food, and the singularity of its internal structure, which enables it to lay in a stock of water for several days, put it in their power to convey bulky commodities through those deserts, which must be crossed by all who travel from any of the countries west of the Euphrates towards India.

Trade was carried on in this manner, particularly by the nations near the Red Sea, from the earliest period of history. Distant journeys, however, would be undertaken at first only occasionally, and by a few adventurers. But by degrees, from attention to their mutual safety and comfort, numerous bodies of merchants assembled at stated times, and forming a temporary association, known afterwards by the name of

a *caravan*, governed by officers of their own choice, and subject to regulations of which experience had taught them the utility, they performed journeys of such extent and duration as appear astonishing to people not accustomed to this mode of carrying on commerce.

When the Romans had extended their conquests so far that the Euphrates became the eastern limit of their empire, they found an intercourse established between the east and the west, and as by these means they received an additional supply of luxuries for which they had acquired the highest relish, it became an object of their policy to protect and encourage it. As the caravans were often molested by the Parthians who had acquired possession of all the provinces between the Caspian Sea and that portion of Tartary which borders on China, the Romans endeavored to render this intercourse more secure by a negotiation with the Emperor of China. Of this singular transaction there is indeed no vestige in the Greek or Roman writers; our knowledge of it is derived entirely from the Chinese historians, by whom we are informed that *An-toun*, the king of the people of the Western Ocean,—who must have been Marcus Antoninus,—sent an embassy with this view to Oun-ti, who reigned over China in the 166th year of the Christian era. The success of this attempt is not known.

The Mohammedan religion, which spread with amazing rapidity over Asia and Africa, contributed greatly toward the increase of commercial intercourse by land in both these quarters of the globe, and gave

it additional vigor by mingling with it a new principle of activity, and by directing it to a common centre. Mohammed enjoined all his followers to visit once in their lifetime the Caaba, or square building in the temple of Mecca, the object, from time immemorial, of veneration among his countrymen. In obedience to this precept, caravans of pilgrims assembled annually in every country where the Mohammedan faith was established. From the shores of the Atlantic on one hand, and from the most remote regions of the east on the other, the votaries of the prophet advanced to Mecca. The numerous camels of each caravan were loaded with valuable merchandize, and the holy city was crowded not only with zealous devotees, but with opulent merchants. During their stay there, the fair of Mecca was one of the greatest on the face of the earth. Mercantile transactions were carried on to an immense extent, of which, the despatch, the silence, the mutual confidence and good faith in conducting them, are a most unequivocal proof. The caravans returned to the west, loaded with the muslins and calicoes of Bengal and the Deccan, the shawls of Cashmere, the pepper of Malabar, the diamonds of Golconda, the pearls of Bahrein, the cinnamon of Ceylon, the spices of the Moluccas, and an immense number of other Indian commodities.

The caravans were regularly organized by government, and placed under the direction of officers of high rank, who assigned to the different travellers their proper place in the long line of march, and took care that good order was maintained. These regulations continue at the present day, although the Mecca cara-

vans have much declined in numbers. In modern times 60,000 men and 20,000 camels sometimes constitute the Hadgi or pilgrim caravan. But this amount is insignificant compared with the numbers that flocked to the holy city in other ages. It is related that when the mother of Matassem b' Illah, the last of the Abbassides, performed her pilgrimage in the year 1254, her caravan contained 120,000 camels. The route towards Mecca lies mostly through sandy deserts or barren uninhabited wilds which seldom afford any subsistence, and where no water can be found, in consequence of which, the pilgrims suffer great hardships. Yet the pilgrimage has often been performed with immense splendor and luxury. The caliph Mahadi expended in one of these expeditions six millions of dinars of gold. The following passage from Moore's *Lalla Rookh* alludes to this circumstance.

Ne'er did the march of Mahadi display
Such pomp before, not e'en when on his way
To Mecca's temple; when both land and sea
Were spoil'd to feed the pilgrim's luxury;
When round him, 'mid the burning sands, he saw
Fruits of the north in icy freshness thaw;
And cool'd his thirsty lip beneath the glow
Of Mecca's sun, with urns of Persian snow.

At the present day, the Syrian caravan, as it is called, although it first starts from Turkey, is the largest and best regulated; yet according to Burckhardt, who saw it at Mecca in 1814, it consisted of no more than 15,000 camels. This caravan sets out from Constantinople and collects pilgrims and traders all

through Anatolia and Syria. During this part of the route, great care is taken for the safety and comfort of the travellers; the armed forces of the different pashas and local governors escort them from town to town, and the magnificence of former sultans has provided caravanserais or inns, and fountains of water by the road-side. On arriving at Damascus, the caravan is under the protection of the pasha of that district, who derives both honor and profit from the charge. At this pleasant city it generally makes a stay of three or four weeks. Here, also, the camels are changed, the Anatolian camel not being considered fit for the remainder of the journey. When all is ready, the pasha of Damascus or one of his chief officers, puts himself at the head of the caravan, which he accompanies to Mecca. The signal for encamping and starting, is the firing of a musket. On its route across the desert, where marauding Arabs are always on the lookout, a troop of horse rides in front, and another in the rear to bring up stragglers. The different parties of travellers who are distinguished by their provinces or towns, keep close together, and each party knows its proper station. The usual arrangement of the travellers is to contract with a *mekowem*, a man who speculates in the furnishing of animals and provisions, and who takes upon himself all the trouble and expense of providing everything for a stipulated sum.

The Egyptian pilgrim caravan, which starts from Cairo, is regulated in much the same manner; but it is not so large, and its route by the head of the Red Sea, and through a country much infested by the Bedoween Arabs, and where water is scarce, is much

more dangerous. The Persian caravan to Mecca, which formerly proceeded through Mesopotamia and Syria, and the Moorish caravan from Morocco, have both become very irregular, though many Persians, Moors and Negroes find their way to Jiddu, the port of Mecca, by sea. Considerable troops of Mohammedan Indians also visit Mecca.

As the journeys of the caravans which are purely commercial, do not commence at stated seasons, and their routes vary according to the convenience or fancy of the merchants of whom they are composed, a description cannot be given of them with any great degree of accuracy. But we know that the circulation of eastern commodities by these caravans is very extensive. The same intercourse which was anciently kept up by the provinces in the north-east of Asia, with Hindostan and China, still subsists. Among all the numerous tribes of Tartars, even of those which retain their pastoral manners in the greatest purity, the demand for the productions of these two countries is very great. In order to supply them with these, caravans set out annually from Boghar, Samarcand, Thibet, and several other places, and return with large cargoes of Indian and Chinese goods. But the trade carried on between Russia and China in this part of Asia, is by far the most extensive and best known. Some connection of this kind, it is probable, was kept up between these from an early period, but it increased greatly after the interior parts of Russia were rendered more accessible by the conquests of Zingis Khan and Tamerlane. The commercial nations of Europe were so well acquainted with the mode of car-

themselves and beasts, and to sell to the Arabs haicks, slippers and old caps, for which they usually receive a good price, and the profits enable them to make advantageous purchases at Mecca, Alexandria and Cairo.

Upon their arrival, after a journey of two months and a half, at that part of the seacoast where the tower of Salines is situated, near Tripoli, they rest ten days. At this place all the travellers supply themselves with forty or fifty days' provisions, which is generally sufficient to support them till they reach Alexandria or Cairo; on their return, they purchase in this neighborhood a large number of mules which they afterwards sell in Morocco at an advance of three or four hundred per cent. At Alexandria or Cairo they furnish themselves with provisions for the remainder of the journey which requires altogether nearly seven months to accomplish. The traders commonly do very well. By purchasing goods at one place and selling them at another, they make upon each sale a profit of ten per cent.

The Arabs from Fez to Egypt, though a rude class of people, are warmly attached to their religion, and on that account always give the travellers a friendly reception, furnishing them with barley, butter, eggs, mutton, beef, &c. But beyond this region, the route is not so easy, as the Arabs, instead of being the benefactors, frequently become the plunderers of the caravans. On such occasions, they spare nothing, and leave the travellers not so much as the necessaries of life; particularly if they refuse the contributions which they usually demand for permitting the caravan to pass peaceably through the country. At Mecca, the traders

purchase muslins, silks, otto of rose, amber, musk, &c. The value of the merchandize imported into Africa by one of these caravans, has been computed at two millions of dollars.

The caravans for the interior of Africa, are not so large as that of Mecca. Some of them set out from the city of Morocco, and others from Tarudant, Fez and Tetuan. They proceed to Timbuctoo, where there are some merchants of Morocco established for the purpose of carrying on a trade with Guinea, where they traffic for slaves, ivory, gold dust, &c. There is great danger in passing the deserts, as the Arabs plunder the caravans, or levy "black mail" upon them. The Arabs of the towns purchase of them blue cloths, daggers, looking-glasses, &c., and generally pay ostrich feathers in return; this trade is very profitable. The chief articles carried to Timbuctoo are tobacco and salt.

The caravan trade between the United States and the northern provinces of Mexico, has, within a few years, grown into importance. This commerce arose from small beginnings, and was originally the result of accident rather than of any organized plan for a commercial establishment. The intercourse between the western settlements of the United States and New Mexico, was opened about the year 1812, previously to which date, but a single individual, excepting Indians, had crossed the desert plains between our western boundaries and Santa Fe. The discoveries of Captain Pike drew the attention of the western people to this quarter, and in 1812, an expedition consisting of about a dozen persons, set out for New Mexico. Fol-

themselves and beasts, and to sell to the Arabs haicks, slippers and old caps, for which they usually receive a good price, and the profits enable them to make advantageous purchases at Mecca, Alexandria and Cairo.

Upon their arrival, after a journey of two months and a half, at that part of the seacoast where the tower of Salines is situated, near Tripoli, they rest ten days. At this place all the travellers supply themselves with forty or fifty days' provisions, which is generally sufficient to support them till they reach Alexandria or Cairo; on their return, they purchase in this neighborhood a large number of mules which they afterwards sell in Morocco at an advance of three or four hundred per cent. At Alexandria or Cairo they furnish themselves with provisions for the remainder of the journey which requires altogether nearly seven months to accomplish. The traders commonly do very well. By purchasing goods at one place and selling them at another, they make upon each sale a profit of ten per cent.

The Arabs from Fez to Egypt, though a rude class of people, are warmly attached to their religion, and on that account always give the travellers a friendly reception, furnishing them with barley, butter, eggs, mutton, beef, &c. But beyond this region, the route is not so easy, as the Arabs, instead of being the benefactors, frequently become the plunderers of the caravans. On such occasions, they spare nothing, and leave the travellers not so much as the necessities of life; particularly if they refuse the contributions which they usually demand for permitting the caravan to pass peaceably through the country. At Mecca, the traders

purchase muslins, silks, otto of rose, amber, musk, &c. The value of the merchandize imported into Africa by one of these caravans, has been computed at two millions of dollars.

The caravans for the interior of Africa, are not so large as that of Mecca. Some of them set out from the city of Morocco, and others from Tarudant, Fez and Tetuan. They proceed to Timbuctoo, where there are some merchants of Morocco established for the purpose of carrying on a trade with Guinea, where they traffic for slaves, ivory, gold dust, &c. There is great danger in passing the deserts, as the Arabs plunder the caravans, or levy "black mail" upon them. The Arabs of the towns purchase of them blue cloths, daggers, looking-glasses, &c., and generally pay ostrich feathers in return; this trade is very profitable. The chief articles carried to Timbuctoo are tobacco and salt.

The caravan trade between the United States and the northern provinces of Mexico, has, within a few years, grown into importance. This commerce arose from small beginnings, and was originally the result of accident rather than of any organized plan for a commercial establishment. The intercourse between the western settlements of the United States and New Mexico, was opened about the year 1812, previously to which date, but a single individual, excepting Indians, had crossed the desert plains between our western boundaries and Santa Fe. The discoveries of Captain Pike drew the attention of the western people to this quarter, and in 1812, an expedition consisting of about a dozen persons, set out for New Mexico. Fol-

lowing the directions given by Pike, they reached Santa Fe in safety. It was well known that the Spanish government had placed the most jealous restrictions upon foreign commerce, and the intercourse of foreigners with their colonies. But these traders imagined that the revolt of Hidalgo had established the independence of Mexico, and that the commercial restrictions were removed. Unfortunately for them, a counter-revolution had re-established the royal authority, Hidalgo was put to death, and all foreigners, but particularly Americans, were viewed with augmented suspicion. The consequence was, that they were immediately arrested as spies, their goods were confiscated, and they were kept in prison for nine years, when the revolt of the Mexicans under Iturbide caused them to be set at liberty.

The accounts which they promulgated respecting the country, were such, that new expeditions were immediately set on foot, and in 1821 Santa Fe was visited by two small caravans of traders who made large profits. Common calicoes, and even coarse unbleached cottons, sold for two and three dollars a yard. These enormous gains had the natural effect of increasing the number of traders in that quarter, and in the following year, two larger caravans were equipped. One of these met with such adventures on the route, that we shall give a short account of them. This party was commanded by Captain Becknell, who being familiar with travelling in the woods, and anxious to avoid the circuitous route of the Upper Arkansas, which the others had pursued, resolved to steer more directly for Santa Fe, entertaining little or no

suspicion of the terrible hardships and sufferings which awaited his party in their journey across the pathless desert. With no other guide but the stars, and perhaps a pocket compass, they struck into the arid plains which extended far and wide before them to the Cinnamon River. No water was found on this route, and they had only a scanty supply in their canteens, which was exhausted after two or three days' march. Then began their sufferings, which increased soon to such a degree that both men and beasts seemed driven to distraction. The wretched sufferers were reduced to the necessity of killing their dogs, and cutting off the ears of their mules in the vain hope of assuaging their burning thirst with the hot blood. This only served to irritate their parched throats and madden them with more intense suffering. Frantic with despair in prospect of the horrible death which now stared them in the face, they scattered in every direction in search of water, but without success.

The deceptive glimmer of the mirage, which is common in that dry region, frequently tantalized them with the prospect of lakes and ponds of water; and they had wandered nearly as far as the banks of the Cinnamon without meeting with a drop of that precious element on which their existence depended. Totally ignorant of where they were, they resolved to retrace their steps to the point where they had quitted the Arkansas. But, weakened and emaciated by suffering, they were now no longer equal to the task, and they would all undoubtedly have perished in the desert, had not some of the party accidentally discovered a buffalo fresh from the river's side, and with

a stomach distended with water,—just as the unfortunate sufferers were on the point of yielding to despair. The animal was immediately despatched, and an invigorating draught taken from his stomach. One of the party relates that nothing which ever passed his lips tasted so delicious as his first draught of that filthy beverage.

This unexpected and providential relief enabled some of the strongest men of the party to reach the river, where they filled their canteens and hurried back to the assistance of their comrades, many of whom were found prostrate on the ground, and incapable of further exertion. By degrees, however, they were all enabled to resume their journey; and following the course of the Arkansas for several days, thereby avoiding the desert regions which had occasioned them so much suffering, they succeeded in reaching Taos, a place sixty or seventy miles north of Santa Fe, without further difficulty. Although travellers have since suffered severely from thirst upon the same desert, yet as the country has become better known, no incidents of so serious a character as the above, have since happened.

The regular trade to Santa Fe may be said to have commenced in the year 1822. The next important point in its history is the introduction of wagons into the caravans. The first attempt was made in 1824, by a company of traders, about eighty in number. Along with the pack-mules employed by this company, were twenty-five wheel carriages. This caravan reached Santa Fe with less difficulty than might have been expected from a first experiment of this nature.

The route appears to have presented fewer obstacles than any ordinary road of equal length in the United States. But it was not until several years after this that adventurers with large capital began to embark in the trade. The early traders having but seldom experienced any molestation from the Indians, generally crossed the plains in detached bands, each individual rarely carrying more than two or three hundred dollars' worth of stock. This peaceful season, however, did not continue long; and it is probable that the hostilities of the savages were provoked by the aggressions of the traders, who did not scruple sometimes to attack certain tribes or individuals in revenge for outrages in times past.

Since the commencement of this trade, the returning parties have performed their journeys across the plains with the proceeds of their enterprise, partly in specie, and partly in furs. Occasionally, straggling bands have been attacked by marauding Indians, but if well armed, and of resolute spirit, they find little difficulty in persuading the savages to let them pass unmolested. The Indians are always willing to compromise where they find they cannot rob without losing the lives of their warriors, which they hardly ever risk, unless for revenge, or in open warfare.

The established point of departure for the caravans is the town of Independence in Missouri, about twelve miles from the Indian frontier, and two or three miles south of the river. They commonly begin their march in May. The provisions which they carry consist of flour, bacon, coffee, sugar, salt and biscuit; the numerous herds of buffalo which they encounter

in the course of their journey, affording them an ample store of meat. Each wagon is drawn by eight mules or oxen, the former being preferred to horses. Oxen have been found to retain their strength far beyond the mules in these expeditions, especially when the way lies through muddy and sandy places; yet they fail when the grass becomes dry and short, and on this account, the general preference is given to the mule. It is usual for the traders first to move off in detached parties, till they reach Council Grove, about ten days' journey distant. At this point of rendezvous they halt to organize a general caravan for mutual aid and defence. During the first hundred miles, more trouble is experienced from the straying of cattle, and from negligence in looking after them, than at any subsequent time, the frequent alarms of the Indians producing greater vigilance. After leaving Council Grove, not a house nor even an Indian wigwam is to be seen.

A caravan sometimes numbers upwards of two hundred wagons. A commander-in-chief is appointed, with lieutenants to the several divisions. The arms are rifles and a few field-pieces, of which latter the savages have a great terror. Buffaloes and Indians are met with in the same regions, but the former are much the more welcome strangers of the two. Sometimes the adventurers encounter a grizzly bear, but it does not appear that this animal, ferocious as he has been represented, often attempts to attack even the stragglers of a caravan. Since 1831, few or none of the difficulties and dangers which once attended this trade, have been experienced. No traders have been

killed by the savages on the regular route, and but few animals have been stolen from the caravans. The rates of insurance upon adventures of this kind, should be hardly as high as from the United States to Liverpool.

The following are the statistics of the Santa Fe caravan trade for ten years.

	Value of Goods Exported.	Wagons.	Men.
1833 . . .	\$180,000 . . .	105 . . .	185
1834 . . .	150,000 . . .	80 . . .	160
1835 . . .	140,000 . . .	75 . . .	140
1836 . . .	130,000 . . .	70 . . .	135
1837 . . .	150,000 . . .	80 . . .	160
1838 . . .	90,000 . . .	50 . . .	100
1839 . . .	250,000 . . .	130 . . .	250
1840 . . .	50,000 . . .	30 . . .	60
1841 . . .	150,000 . . .	60 . . .	100
1842 . . .	160,000 . . .	70 . . .	120
1843 . . .	450,000 . . .	230 . . .	350



MINING.



THE art of mining seems to have been known to the ancient Greeks and Egyptians. Gold and silver were abundant in those days. An alloy of copper and tin formed the armor and weapons of the Greeks, although iron was not unknown among them, and of this metal the weapons of the Romans were formed. These facts, however, do not imply any great knowledge of the art of mining, properly so called, as it is well known that metalliferous deposits are often found near the surface, as gold and copper, frequently in a state of

great purity ; and in early ages when they had been so little sought for by the miners, these superficial deposits must have been much more abundant than at present, and probably furnished a large proportion of the metallic produce of those times. Most of the mines of antiquity were probably of a similar nature to the stream-works of Cornwall ; and it appears from Strabo, that the Phenicians used to trade to that place for tin and lead.

In early times the demand for the metals could not have been very great ; they were applied chiefly to the manufacture of instruments of luxury or war, so that the quantity found near the surface was in all probability fully adequate, leaving but little inducement for deeper and more laborious research. There is, however, evidence to show that operations similar to those of modern mining, were carried on by the nations of antiquity. Herodotus states that a mountain in the island of Thasos was completely burrowed by the Phenicians in their search for the precious metals ; and the curious fragment of Agatharchides, preserved in Diodorus, shows that the art of forming shafts and passages for exploring the mines and procuring metals, was well known in Egypt. The silver mines of Laurium, in Attica, were worked by the Athenians as early as the fourth century before Christ. Under the Romans, the quicksilver mines of Almaden, in Spain, were extensively wrought.

The tin of Cornwall was undoubtedly the first metal sought after in Britain ; and the ores of tin are still found there at various depths. After the processes for finding and separating metallic ores from alluvial

matter in which they were casually mixed, the next step was to procure them by digging out the veins themselves and following them into the solid rocks in which they are formed. At first, this could only have been done where, by the elevation of the mountains, it was possible to work high enough for the waters to discharge themselves by conduits or *adits* from the works, and where the rock was not too hard to yield to tools rudely formed, or perhaps to the agency of fire. It was not till machines were applied to pump the waters, that the metals could be followed to any considerable depth, and not until gunpowder had furnished the means of splitting the hardest rock, that man was enabled to penetrate the strata of every description that opposed his progress.

These inventions, therefore, form most important epochs in the history of mining; for since mankind have called in the assistance of such powerful agents, neither the influx of constantly flowing water, nor the barriers which the hardest rock can present, are obstacles in the way of the miner, where rich and productive mines of ore tempt the pursuit. The first important era was the period in which the application of gunpowder to the purposes of mining took place, which happened in Hungary or Germany about the year 1620, and was first introduced into England at the copper-mine of Ecton in Staffordshire, about 1670, by some German miners. There are many mines which could not possibly have been worked without the aid of gunpowder, and until it was used, subterranean operations must have been difficult and very uncertain. The hammer and wedges were probably the first instru-

ments employed for splitting rocks, and these were followed by the *pick*, which is used both as a hammer and a wedge. Many tools of oak have been occasionally met with, which, according to the traditions of the Cornish miners, were used by the Saxons or Danes. Wedges of dry wood were used by driving them into clefts of the rock, and then wetting them so as to cause them to swell, and thus, by repeated similar insertions, to force the rock asunder.

The means employed for raising or throwing up the ores and waste stuff to the surface, were at first as rude as the other operations of mining. The windlass and bucket may be reckoned an improvement which took place in a later stage of mining, as simple a thing as it certainly is : it is now in a great measure superseded by more effective machinery. In South America the windlass is even yet hardly known, and the ores are either brought up by Indians, or where the situation admits of sloping roads being made to the bottom of the mine, are conveyed to the surface on the backs of mules. When mines were worked deep, the labor of raising the water which was constantly collecting, became too great for mere manual exertion, and hydraulic machines were employed for the purpose. The German miners seem to have had the merit of this invention, yet it remains in the original rude state in that country. The English miners have improved the pump-work and water engines to a high degree of perfection ; and there are single mines in England which discharge as much water as the pumps of a whole province of German mines. The invention of the steam-engine gave to the miner a power capable

of universal application, and of an effect that added, as it were, new regions of subterranean country to his control. Depths hitherto unattainable are now placed at his command, and no limit can be assigned to his exertion but that of the expense compared with the value of the produce.

The miner's object, in his first operations is to get at some shoot or branch of ore as quickly as possible. As soon, therefore, as indications of a vein of metal are perceived on the surface, the most promising spot is chosen for the commencement of a *shaft*, which is either sunk upon the vein so as to follow its dip and underlay, or otherwise is carried down perpendicularly from some spot on the side to which it dips, so as to intersect it at a given depth, and this is usually called an *underlayer*. As water is commonly soon met with in such quantities as to impede the workmen, means for removing it must be provided. Where the elevation of the ground will admit of an adit, or water-level being made, this is usually first put in practice. Where the shaft becomes deeper than the adit, steam-engines to draw out the water are erected, or overshot wheels, when streams to drive them can be obtained; these engines are employed to work pumps.

As soon as the shaft is sunk sufficiently deep, and it becomes desirable to pursue the work horizontally, the shaft is suspended for a time, and a level opening is commenced on each side of it; this is usually continued in two opposite directions upon the course of the vein. The ends of this level being driven out of the way of the shaft, sinking may be again undertaken, and continued until it is proper to drive another level;

and thus a succession of these galleries or drifts are opened under each other, and the vein is divided into parallel portions which are left to be worked for the ore contained in them, and which portions are called *backs*. New openings to the surface from these levels are afterwards made by sinking more shafts at proper distances, and communications from one level to another are formed by sinking a kind of small under ground shaft.

When a mine is put into this state, and any quantity of ore is discovered, proper engines are provided with sufficient power to admit the constant deepening of the mine by keeping the bottom dry, so as to be regularly sinking. When the ventilation is completed by proper means for that purpose, and machines are constructed for drawing up the ore and waste, the mine is considered to be in due course of working. The shafts and levels are kept regularly sinking and driving, to lead to further discovery; or to open more of the *lode* or vein for working; and the parts of the vein left between the passages thus made are worked away where the ore will pay the expense.

In preparing the ores for smelting, a variety of operations must be gone through, which require the labor of many hands; these are carried on upon the surface, sometimes by women and children. It is necessary to separate the ore from the earth and its impurities; the better parts are broken to a proper size for smelting by hammers, or by iron cylinders set in motion by water. For the coarser parts, much more labor is required in pounding, sifting, washing, &c. The "stamping-mills" and other apparatus for dressing

the ore, are usually fixed as near the mouths of the shafts on the surface as possible, consistently with the power of leading streams of water to them. The erections on the surface of a mine comprise steam or water engines, stamping-mills, sheds, forges, carpenters' shops, &c.

Such is a general description of a mine in Cornwall, where the art has been carried to the greatest perfection. Some mines here employ over two thousand persons, and have several steam engines constantly at work. In Devonshire, streams of water being at hand, large overshot wheels are employed for working the pumps, and some of them are equal in power to the larger steam engines.

We cannot give a better idea of the mines of Cornwall, than by copying the description furnished by Professor Silliman, who descended one of them some years since. "I prepared for my descent by throwing off my own dress and putting on that of the miners. It consisted of a very large shirt of very coarse materials, and made like the frocks of the Connecticut farmers ; then of a pair of large sailor trousers striped across with white and black, of the coarsest stuff which is here employed for horse-blankets ; and over all was a loose coat, which like the rest of my apparel exhibited the strongest evidence that it had often been below the surface. I wore a pair of cowskin shoes without stockings, made fast by tow strings passing under the sole and over the instep. Over my head they drew a white cap which they crowned with an old hat without a brim. Besides the captain I had another guide, an experienced miner, who went before, while the cap-

tain followed me. Each of them carried a supply of candles tied to a button-hole, and like them, I bore a lighted candle in my left hand stuck into a mass of wet clay.

“The mines of Cornwall are of much more difficult access than those of Derbyshire, for instead of going horizontally, or with only a gentle descent into the side of a mountain, we are obliged to go perpendicularly down the shaft, which is a pit formed by digging and blasting, and exactly resembles a well, except in its greater depth and varying size, which is sometimes greater and sometimes smaller, according to circumstances. The descent is by means of ladders; at the termination of each ladder, there is commonly a resting place formed by a piece of timber or a plank fixed across, on the stones or earth which form the walls of the pit; this supports the ladder above, and from it the adventurer steps on to the ladder below. With each a lighted candle so held by the thumb and forefinger of the left hand as to leave the other three fingers at liberty to grasp the rounds of the ladder, and with the right hand devoted wholly to the same service, we commenced our descent.

“It was laborious and hazardous, but we did not stop till we had descended 400 feet. The rounds of the ladders are constantly wet and muddy, and therefore very slippery; many of them, through length of time, are decayed and worn so very small, that they seem on the point of giving way. In descending perpendicularly with these disadvantages, the utmost caution is therefore requisite on the part of a novice, lest he should quit his foothold before he has a firm grasp

with his fingers, or lest in the dim twilight shed by his candle, he should make a false aim with his foot or hand, or take an imperfect and untenable hold with either; not to mention the danger of the giving way of the rounds of the ladder; any of which accidents would send him to a place whence he would not return.

“ When I first began to descend, I made it very laborious by drawing my body as near as possible to the ladder, thus imposing on the muscles of the arms and chest the painful task of supporting me, with my arms bent in quite an acute angle; but my guides instructed me to hang off from the ladder as far as possible, thus keeping the arms straight; and it is incredible how much it diminished the labor of the muscles. Having arrived at the depth of 400 feet, we came to what the miners call an adit or level, that is, a passage running horizontally or at right angles with the shaft. This passage had been made through the solid rock, and was high enough to allow us to pass along stooping, which we did for a considerable distance, when the sound of human voices from below indicated our approach to the populous regions of midnight; while the rattling of mechanical instruments employed in breaking off the ore, and the report from the explosion of gunpowder reverberated along these narrow caverns, with the sulphureous and suffocating smoke, presented a combination of circumstances, which might well have given one the impression that he had arrived in a worse place than the mine of Dolgoath.

“ Proceeding along the adit, we came to another shaft

down which we descended 200 feet more, and were then full 600 feet from the surface. This was the principal scene of labor; at about this depth there were great numbers of miners engaged in their respective employments. Some were boring the rock; others charging with gunpowder the holes already made; others knocking off the ore with hammers, or prying it with pickaxes; others loading the buckets with ore to be drawn to the surface; others working the windlasses to raise the rubbish from one level to another, and ultimately to the top;—in short all were busy; and although to us their employment seems only another name for wretchedness, they appeared quite a contented and cheerful class of people. In their manners they are gentle and uncommonly civil, and most of them paid me some mark of respect as a stranger.

“We occupied three hours in exploring the mine, and in this time travelled a mile under ground in various directions. The employment was extremely laborious. We could rarely walk erect; often we were obliged to crawl on our hands and knees, over sharp, rugged stones, and frequently it was necessary to lie down flat and to work our way along by the points of the elbows, and the extremities of the toes, like seals on a beach. At one time we descended, and at another ascended through a narrow aperture, where we could only with difficulty squeeze ourselves through, and we then continued our progress by stepping on the projections of the rock, as men do in going up or down a well. My perspiration was so violent, that streams literally ran from my nose, locks, and chin, and in this state we came to the channel where the water of

the mine flows off through which we were obliged to wade along, half leg deep for thirty rods.

“Having seen all the interesting things of the place, we began to ascend. We were drawn up a small part of the way in a bucket worked by a windlass, but we went up principally by ladders in a shaft quite remote from that in which we descended. It was that in which the rod of the steam-engine plays to draw up the water. This engine is one of great magnitude. The rod, which is made of pieces of timber, and at the top cannot be less than five or six feet in diameter, descends perpendicularly 180 fathoms, or 1080 feet, and motion is propagated through this whole distance so as to raise a weight of 30,000 pounds at every stroke, for this is the power of the engine. At length after a most laborious and painful ascent, less hazardous it is true, but incomparably more fatiguing than the descent, we reached the surface in safety, at a great distance from the place where we first descended. With joy, with gratitude, I beheld the returning light of heaven, and though I could not think that, in my case, the enterprise was rash, I should certainly dissuade any friend from gratifying mere curiosity at so much hazard. The danger is serious, even to the miners, for by explosions, falls, by mephitic gases, and other causes connected with the nature of the employments, numbers of the people are carried off every year, and on this account, Redruth and its vicinity have an uncommon proportion of widows and orphans.”



COAL MINES.

IN working mines of coal or rock-salt, the process differs considerably from the working of most metallic veins where the object of search is fluctuating and irregular in its produce, and either vertical or highly inclined in its position. The design in coal mines is the effectual opening and extraction of a tolerably uniform mass, generally of small thickness, but of great horizontal extension. The thickness of beds of coal may be said to vary from three to nine feet, although sometimes, when several seams come together without any intervening layers of rock, they may expand to twenty or thirty feet. In every coal field there are several seams of coal at greater or less intervals, one below another, of which as many as three or four are frequently worked in the same mine; and interstratified with the rock which divides them, there are in many coal fields, extremely productive beds of iron-stone, which are wrought at the same time, and in a similar manner with the coal.

The probable existence of beds of coal having been determined, and perhaps the beds themselves discovered by boring, the first process is to sink a perpendicular shaft from the surface, so as to intersect the various strata containing the coal, and of course, as many of the beds of coal as are considered to be worth the working. The shaft is generally circular, and may vary according to circumstances, from six to ten feet in diameter. The upper portion as far

down as the solid rock, is either bricked or walled, and where the ground is weak, this casing is continued throughout. On reaching the first workable seam of coal, the sinking of the pit is for a time suspended, and a broad, straight passage, termed a *bord*, or *gate*, is driven from it upon the seams of coal in opposite directions. The breadth of this passage is usually twelve or fourteen feet, and it is formed the whole height of the seam of coal, so as to expose the stratum above, which is called the "roof," and the one below which is termed the "*thill*," and its direction is always arranged so as to follow the cleavage of the coal which forms its sides, which thus present a clean, uniform surface. When the "bord" or "mother-gate" has proceeded some distance on both sides of the pit, narrow passages, termed "headways," are driven from it at regular intervals, and exactly at right angles; and when these have proceeded eight or ten yards, they are made to communicate with another *bord*, which is opened parallel to the first and on each side of it. By continuing this system of excavation the bed is entirely laid open and intersected by a series of broad parallel passages, about eight yards apart, communicating with each other by narrower passages or *headways*, which cross them at right angles, and likewise traverse the whole extent of the mines; immense squares or rectangular pillars of coal being left standing between the two. A coal mine in this state is in fact not unlike a regularly built town: the bords and headways may be compared to the streets, while the pillars of coal may be said to resemble the intermediate masses of buildings.

Coal mining is a much more dangerous process than the operations in other mines. It is well known that coal mines, especially such as are deep, are occasionally infested with a gaseous air called "fire-damp," the chemical name of which is carburetted hydrogen. By contact with fire this gas explodes, causing the most frightful destruction of life; and the accidents of this sort which have happened in the Newcastle collieries and other mining regions in England, are innumerable. Many contrivances have been proposed to prevent these fatal occurrences, but the only one that has been judged safe, and come into general use, is the *safety lamp* of Sir Humphrey Davy, who first analyzed and ascertained the properties of the fire-damp. This able chemist discovered on investigation that it required an admixture of a large quantity of atmospheric air to render it explosive, and when mixed with four times its bulk of air, it burst quietly in the atmosphere; with between five and six times it exploded feebly; with seven or eight times the explosion was strong; and when mixed with even fourteen times its bulk of air, the compound was still explosive. Proceeding with his experiments, Davy ascertained that explosions of inflammable gases were incapable of being passed through long, narrow metallic tubes, and that this principle of security was still obtained by diminishing their length and diameter at the same time, so that a great number of small apertures would not pass explosion when their depth was equal to their diameter. This fact led to trials made with sieves of wire gauze, and he found that if a piece of the latter was held over the flame of a lamp or of coal

gas, it prevented this from passing; he also ascertained that a flame, confined in a cylinder of any fine gauze did not explode even a mixture of oxygen and hydrogen, while they burnt in it with great vivacity. These experiments served as the basis of the safety lamp, which was long regarded as one of the most important discoveries of the present age; though its utility was no doubt overrated.

In the safety lamp the apertures in the gauze should not be more than the 22d part of an inch square. As the fire-damp is not inflated by ignited wire, the thickness of the wire is not important, but wire from $\frac{1}{8}$ to $\frac{1}{10}$ of an inch in diameter is the most convenient. When the lamp is lighted and introduced into an atmosphere gradually mixed with fire-damp, the first effect is an increase in the size of the flame. When the inflammable gas forms as much as $\frac{1}{2}$ of the volume of the air, the cylinder becomes filled with a feeble blue flame, but the flame of the wick appears burning brightly within this blue flame, and the light of the wick continues till the fire-damp increases to $\frac{1}{6}$ or $\frac{1}{5}$, when it is lost in the flame of the fire-damp, which in this case fills the cylinder with a pretty strong light. When the foul air constitutes $\frac{1}{3}$ of the atmosphere, it is no longer fit for respiration.

It does not appear, however, that this valuable invention has had the effect of saving the lives of the miners, but the contrary; for by trusting to it for protection they now venture into places which were formerly regarded as far too dangerous to approach, and which even now, are entered with great hazard of life.

As an example of the numerous catastrophes which

have happened to miners, we may mention the following. The town of St. Etienne, in France, has acquired, by its manufactures of iron and silk, the appellation of the Birmingham and Coventry of France. Though very far from contemptible, it is however, at most, only a miniature likeness of the two celebrated towns to which it is compared. For its prosperity, it is indebted to the circumstance of the iron ore and coal being abundant in its vicinity. Among the coal mines in its immediate neighborhood, is that of Bois Monzil, the scene of the event which is now to be described.

On the 2d of February, 1831, about eight in the morning, when there were twenty-six men at work, a sudden detonation was heard, instantly followed by the roar of water, rushing from the adjoining pit. The cry of alarm was quickly spread through the mine, but only ten of the laborers were able to reach the entrance. One of them was driven forward with such violence, by the condensed air and the torrent, that his escape was miraculous; another was so terrified, that he hurried forward, without thinking to disencumber himself of a sack of coals which he had upon his shoulders; a third, who possessed both presence of mind and humanity, snatched up a boy of eleven years old and bore him away in his arms.

Eight individuals perished. Some of them were swept away by the deluge—but at least one of them had to endure a lingering death. He was heard for some hours knocking against the sides of his prison; at the end of that time the knocking ceased—the flood had overwhelmed him. The remaining

eight workmen were fortunate enough to reach a gallery on a higher level ; but, as it had no other outlet than that by which they entered, their fate was certain, unless the water should recede, or their friends could open a passage through the rock beneath them.

On hearing of the accident, the engineers of the mine hastened with their assistants to the spot. Thirty hours elapsed before the miners could penetrate into some of the lower galleries from which the water had retired. They repeatedly called aloud to their lost companions, but no voice was heard in reply. They then struck with their pickaxes upon the roof, and after several fruitless trials, they were rejoiced to hear an equal number of answering knocks.

Measures were immediately adopted for opening a communication with the imprisoned men ; the principal of them were the boring a hole through the rock, in the supposed direction whence the sound came, and the forming of an inclined tunnel. But there was much difficulty in ascertaining the point to which they ought to direct their efforts ; for the sound of their blows on the roof, far from offering a certain criterion, or at least a probable one, seemed each time to excite fresh doubts. The rock, too, was so hard and thick, that the gunpowder employed in blasting it produced but a trifling effect ; nor could the pumps be got to work, and they were therefore obliged to resort to the slow and incompetent method of forming a line of men from the gallery to the mouth of the mine, and passing the buckets from hand to hand.

The persons who were thus employed, had to work upon a rapid slope, in a crouching posture, with the

water dropping all round them, and generally rising up to the middle of their bodies. They had to endure that which was still worse to men not devoid of humanity. The wives of the hapless miners had heard that all hope was not extinct, and they hastened to the spot. With heart-rending cries, and shedding tears alternately of despair and hope, they exclaimed, "Are they *all* there? Where is the father of my children? Is *he* amongst them, or has he been swallowed up by the waters?"

When it became known at St. Etienne and its vicinity, that there was a prospect of saving a part of the victims, the whole of the National Guards, and several hundreds of miners and other persons, thronged to lend their assistance. The pumps were now made to work, and the line of men with buckets was consequently discontinued. Yet, notwithstanding the number of additional hands, the work proceeded but slowly. Such was the flinty hardness of the rock, that frequently the tools either broke, or remained immovably fixed in the stone. The water also filtered in rapidly through the perforation which they were making, and seemed to threaten another irruption.

It was now Sunday, and the spirits of the workmen began to flag. On the following day an alarming incident occurred which spread a general panic. A terrific noise was heard, which was prolonged in echoes throughout the mine. When their terror had sufficiently subsided to allow of their investigating its cause, they found that an enormous mass of rock had fallen into one of the draining wells. Though this fall was attended by no bad consequences, the work-

men were so much disheartened by it, that it required much management to bring them back to their labors, and revive their courage and perseverance.

By dint of persuasion and argument, the superintendents at length prevailed on the men to make a vigorous effort. In a very short time, that exertion was crowned with success. The instrument of one of the miners penetrated into the shut-up gallery, and was drawn from his hands by the poor imprisoned miners. But the man who had thus been the first to open a way into the dungeon, was still more unfortunate than they were. At the moment when hope dawned to them, it set forever to him. He was the father of one of the men who had disappeared in the mine. His paternal feelings seemed to have endowed him with superhuman strength. Night and day he quitted his work only for a few moments to return to it with redoubled vigor.

One absorbing thought occupied his whole soul; the idea that his son, his *only* son, was with those who were heard from within. In vain he was solicited to retire; in vain they strove to force him from labors too fatiguing for his age. "My son is among them," said he; "I hear him; nothing shall prevent me from hastening to his release;" and from time to time he called on his son, in accents that tore the hearts of the by-standers. His first question, on the instrument being drawn from his hand, was, "My child!" His Antoine was no more; he had been drowned.

For four days, medical men had been present in the mine, to be ready to give their aid, as soon as a passage should be opened. They now directed soup to

be introduced through a tube, and air to be forced into the gallery by means of bellows. Food was, however, by no means the most urgent want of the captives; light was what they first and most pressingly requested. A tinder-box was conveyed to them, but the vitiated air rendered it of no use. At first, they seemed to be strengthened by the soup, of which they had made their oldest and weakest companions the earliest partakers; but afterwards it had a contrary effect. They therefore for the present rejected the nourishment which was occasionally applied, and expressed but one wish, which was that their friends would make haste. Yet one at least there was, who had not lost all his gaiety. This was a man, named Fereol. When he was asked what day he thought it was, he replied, "Sunday;" and upon being told it was Monday, he rejoined, "Ah, I ought to have known that—for yesterday we indulged ourselves by tippling freely—of water."

But though some of them retained their cheerfulness, the strength of all was rapidly failing. Their utterance grew gradually more faint; and about six in the evening, the last words that could be distinguished were, "Brothers, make haste." By ten in the evening, they had broken through sixteen feet of solid rock, and liberated the captives. Looking more like spectres than human beings, the miners, one by one, slowly traversed the gallery, and emerged into open air, which they had so recently almost despaired of ever breathing again. From the mouth of the mine to the temporary residence allotted them, the whole way was illuminated. The engineers, the pupils, and

the workmen, with the National Guard under arms, were drawn up in two lines to form a passage, and thus, in the midst of a religious silence, did these poor fellows traverse an attentive and sympathizing crowd, who, as they passed along, inclined their heads, as a sort of respect and honor to their sufferings.

The most extensive and important coal mines in the United States are the anthracite mines of Pennsylvania. In no other part of the world is this kind of coal found so abundantly as in this state. The value of this article particularly for mechanical purposes, can hardly be too highly estimated. For the manufacture of iron, it is peculiarly advantageous, as it contains little sulphur or other injurious ingredients, and produces an intense steady heat. Bar-iron, chains, steam-machinery and wrought iron of every description, have more tenacity and malleability with less waste of metal when fabricated by anthracite than by the aid of bituminous coal or charcoal, with the important advantage of the diminution of expense of at least fifty per cent. in labor and fuel. Iron castings are also stronger when the melting has been effected by the means of anthracite. For breweries, distilleries, and the raising of steam, anthracite is decidedly preferable to bituminous coal or other fuel, the heat being more steady and manageable, and the boilers less corroded by sulphureous acid, while no bad effects are produced by smoke and bitumen.

The anthracite district of Pennsylvania lies mostly between the Blue Ridge and the river Susquehannah. It is chiefly occupied by mountains, often broad, with

table-land summits, generally about 1500 feet above the ocean. The mines are not subterraneous—as the coal lies so near the surface that it is rendered accessible by removing a layer of soil sometimes only a few inches deep. In the colliery of the Mauch Chunk on the Lehigh, the excavation is carried thirty or forty feet deep, forming an enormous hollow square, inclosed by lofty mural precipices of coal. Wagons enter these excavations by the avenues that serve to discharge the water from the mine. The coal is easily detached by picks and bars. It is conveyed down the stream of the Lehigh, and thence down the Delaware to market in flat-bottomed boats.

Of all the mineral products, that of coal is one of the most important to man. It is impossible to look upon the immense beds of this, scattered throughout every clime, without feeling that Providence has exercised a wise and beneficent care in furnishing it for the use of man. When we consider the means by which it has been prepared ; the mighty agents that have been employed, and the countless years that have been expended, in the production ; and when we see, moreover, that iron, not less important to man than coal, is laid in exhaustless beds by the side of it, and thus in situations to be easily wrought—we shall remark one of the many instances of Omniscient beneficence, which true philosophy unfolds to the mind.

The uses of coal are various ; in countries where the population becomes crowded, and the natural fuel supplied by the forest is exhausted, it is the indispensable substitute in the kitchen and the parlor ; it supplies the gas which banishes the gloom of night from the

streets of the city ; it turns the wheel of the factory, urges the steamer through the waves and impels the locomotive upon its track. There is not a magician in the whole range of romance, which produces scenes so wonderful as mineral coal. The black, senseless mass, is dug from the earth, where it has slumbered for countless ages, and now, as if in compensation of its long repose, it liquifies the stubborn metal in the forge ; it turns the ponderous crank of the steam engine ; it delves in the mine, it toils on the land and the sea ; it dispenses warmth in the parlor, heats the tea kettle, broils the steak, and illuminates the city. In every quarter of the world, with a thousand hands, it is toiling for the benefit of man. What Arabian tale presents us with magic equal to this ?

We are told that a bushel of coal is sufficient, if its power were properly applied, to carry a man from the valley of Chamouni, to the top of Mont Blanc ; yet the quantity annually taken out in Great Britain and Ireland alone, is twenty millions of tons. It is estimated that 15,000 steam engines are moved by it in England, some of them equal in power to a thousand horses ; and performing as much work in connection with machinery, as could be executed by four millions of men ! It is impossible for the mind to compass, in a single view, the extent to which mineral coal is contributing to the comfort, luxury and civilization of men. Was such a product the result of accident or chance ?

The annual product of the mines of Pennsylvania is about two million of tons ; and there are other mines,

as in Rhode Island, Virginia, Maryland, Ohio, &c., from which considerable quantities are taken.*

There are considerable coal mines in France, Bel

* "The Apalachian system of mountains in the United States contains the Anthracite, and the Alleghany the Bituminous, extending to the West over an immense area.

To have the usual coal measures we should be elevated many hundred feet. There are small deposits in Massachusetts and Rhode Island. No part of the world equals Pennsylvania in coal beds. Here are found three kinds. 1st. Cannel, 2d. Bituminous, 3d. Anthracite. It occupies a part, or the whole, of thirty out of fifty-four counties in that State.

In Pennsylvania, one bed of the Anthracite is sixty miles long, two wide and 100 feet deep.

The Anthracite regions lie to the north-east of the Susquehannah; the principal fields of this description are three in number, with an aggregate of sixty-five miles in length, and three miles in breadth, embracing 624,000 square acres.

The Bituminous region in Pennsylvania is still more extensive. The beds vary from one to twelve feet in thickness. It abounds in all the Western counties, except Erie, embracing a field of seventy thousand square miles, or thirteen millions four hundred and forty thousand square acres. Two million of tons are annually taken from these beds, equal to one tenth of what is annually taken from all Great Britain; and nearly half of what is obtained from all other countries of Europe, and about equal to that in France.

In Maryland there are two fields, one of which embraces 400 square miles; the other is of unknown extent.

The coal beds in Virginia are from forty to sixty feet in thickness.

Nearly all the south-east part of Ohio is one vast field of coal. Some places will yield 9,000,000 tons to a square mile, and there are not less than 12,000 square miles of coal.

It is also found in the north-eastern part of Kentucky, in Tennessee, and Alabama, Mississippi, Indiana, Illinois, &c."

gium, and other parts of Europe, but they are nowhere wrought to so great an extent as in Great Britain.

The important part that mineral coal is playing in human affairs, is obvious from the preceding facts, but yet it must not be forgotten that it is obtained at a prodigious expense of human life and comfort. The accounts of the miserable condition of thousands of the English miners, is truly appalling. Not only men, but women and even girls and boys, are made to toil in the bowels of the earth, in the most constrained positions, with poor fare, and often performing what might rather seem the offices of brutes than human beings. Grimed with coal, pent up in dim and dismal caverns, children from ten to fifteen years of age, are harnessed to cars, and on all fours, are made to draw them loaded, through the passages of the mines; and women, dingy as Vulcan himself, are seen emerging from the mouths of the excavations, loaded with sacks of coal!

Nor are the degradations of whole communities, the only price paid by society for mineral coal. The most fearful catastrophes have sometimes happened, either from sudden inundation, or the caving in of the earth. We have described a case of the former; the following instance of the latter, occurred at Moxly Heath, England, in 1817. On the morning of the eventful day, about a dozen men were at work at the extremity of the mine, when they suddenly heard a heavy crushing sound toward the opening. At the same moment, their lights were extinguished by a violent concussion of the air. The accident was soon made known to the people without, and the alarm

was communicated like wildfire throughout the adjacent districts. Thousands were soon seen rushing to the fatal spot,—fathers, mothers, wives and children, presenting by their cries an indescribable scene of panic and distress. •

Immediate measures were taken to deliver the sufferers, if possible, from their tomb. Working gangs were found sufficiently numerous to relieve each other by short relays. Day and night the work proceeded, with unabated activity. The accident occurred on Monday, and on the morning of the following Sunday the tapping of hammers was heard from within. The state of feeling at this moment was indescribable. The men wrought with a feeling almost amounting to frenzy. The state of excitement among the assembled crowd at the mouth of the excavation cannot be imagined.

Early on Monday morning, an opening was made into the cavern, and the joyous intelligence was soon communicated that nine of the men and one boy were still alive. The sensations of the assembled relations of these unhappy persons were most intense, and one woman died with excess of joy upon hearing that her husband was living.

The sufferers in the mine were in a state of extreme exhaustion, but medical men were in attendance, and by judicious treatment, they all recovered. The account which they gave after their restoration, was in the highest degree interesting. The boy who was among the party was about twelve years old. He sat upon his father's knees and slept the greater part of the time, occasionally waking and crying for his

mother. One of the men who was injured by the falling mass of stones, expired in great agony, for amid the darkness, no help could be rendered to him.

IRON MINES.

IRON is the most useful of all the metals, and has contributed more to the civilization of man, than all others, put together. It furnishes the tools by which we cut wood, stone and other substances, and therefore lies at the foundation of nearly all the arts of life. The shoemaker, carpenter, mason, wheelwright, tailor, hunter, fisherman, farmer—all are dependents upon iron. Without this useful metal, society must have remained either in a savage or barbarous state.

It is fortunate for mankind that this necessary mineral is scattered throughout every clime, and is found in almost every country. While gold and silver are only met with in particular regions and in small quantities, iron abounds and is obtained as well in rocky ores, as mixed with earth, it being produced by growth, in the latter state.

Iron has, in a few cases, been found nearly pure, in large masses, lying on the top of the ground. In 1750, a Cossack blacksmith secured a large lump of this kind, lying on the top of a mountain near the river Yenisei. It weighed 1512 pounds, and was regarded by the Tartars with superstition, there being a tradition that it had fallen from heaven. A mass weighing 29,120 pounds, was found in South America, 800 miles north-east of Buenos Ayres. These detached

masses of iron, are deemed meteoric, and are supposed to be parts of *aërolites*, that have fallen upon the earth. The iron for use is almost wholly dug in mines, in the form of *iron-stone*, or in the state of *bog ore*.

After this ore is obtained, it has to undergo a process of *smelting*, in order to separate the metal from the stony or earthy portion. The first step in this operation is to reduce it to a liquid state by means of heat. For this purpose, a blast-furnace is constructed, which is something in the shape of a chimney, built of masonry, and carefully lined with fire-brick. The ore having previously been roasted or calcined in a kiln, in order to drive off the water, sulphur and arsenic, with which it is more or less combined in its natural state, is put into this furnace mixed up with coal and limestone, which latter substance helps its fusion. The heat which would be produced merely by setting fire to the fuel, would be altogether insufficient to melt the ore if it were not increased by forcing in a current of air. For this purpose it is necessary to use a strong mechanical force, and of late years the agency of steam has been most commonly employed. Water-wheels, where they can be had, are of course, cheaper agents, but there are not many places where a sufficiently copious and regular supply of water, at all seasons, can be commanded. The air, forced by the playing of a number of large bellows, into the furnace, raises the heat to a degree of intensity sufficient for the smelting of the ore. In the more improved of these machines, the ore is previously heated in cast iron vessels to about 300° of Fahrenheit, by which the

dampness always existing in atmospheric air is expelled, and the quality of the iron improved.

When the whole of the ore is reduced to a fluid state, it is drawn off by a tap at the bottom of the furnace into channels formed in the sand of the smelting-house floor. The names of *sow-metal* and *pig-metal*, which were originally given by the workmen, signify, in one case, the blocks of iron which are formed in the large main channels, and in the other case, the smaller blocks which are formed in smaller side-channels communicating with the larger ones. These names were adopted from the fancied resemblance of the cast metal to a sow and her litter of pigs. This is iron in its crudest state. The weight of materials lost in its production is somewhat greater than that of the fuel used. Large heaps of cinder are gradually accumulated in the neighborhood of iron-works, and give a dreary aspect to the country.

Forge or bar-iron is pig-iron freed from carbon and oxygen. The first operation for producing this change is called refining, and is performed in small, low furnaces, having the hearth of fire-bricks and the sides of cast iron, made hollow to allow the streams of water to pass constantly through, which prevents their being quickly burnt away. The iron is kept in a state of fusion in the refinery, for some time, exposed to an intense heat produced by a strong blast. It is then drawn off into moulds, where by sudden cooling it becomes very brittle. The next process for making bars is called *puddling*, which is performed in a reverberatory furnace. The iron is here again melted and worked over till it forms into lumps, which are

shaped by hammering so as to pass through the rolling-mills, by which they are wrought into bars.

The iron trade of Great Britain is immense. It is stated that 700,000 tons are annually taken from the mines, which, in its rudest state, is worth eighteen millions of dollars. Beside this, some is imported from Sweden, and nearly the whole is manufactured into a thousand forms, from needles up to steam-engines and steam-ships. It is not possible to form any adequate conception of the variety and extent of these manufactures. Staffordshire is the centre of these works, and here, day and night, may be seen the blast furnaces, lifting their tall tubes toward the sky, and spouting forth smoke and flames for months and years, without a moment's cessation. It has been stated that some furnaces have been in continual blast for ten and even twenty years. The art of working iron is now carried to such perfection that it is used in England in a multitude of new forms, thus greatly extending the consumption of the article.

The iron mines of Sweden, Norway, Russia, France, and the United States, are extensive. They exist in Vermont, Massachusetts, New Jersey, Ohio, Kentucky and Pennsylvania; vast quantities are obtained in those of the latter state. Pittsburgh is largely devoted to the manufacture of iron, and the smoking flues of the city give it an aspect greatly resembling the manufacturing towns of Great Britain. Beside the iron produced in our own country, large quantities are imported from Sweden and Russia. A great amount of manufactured iron is imported from Great Britain.

COPPER MINES.

COPPER, next to iron, is the most useful metal in the arts, and it appears to have been in use, even anterior to iron. It is found both in a pure state and in the condition of ore. There are several mines in England, but the most famous are those of Cornwall, one of which, explored by Professor Silliman, has been already described. The total product of the mines of Great Britain, is about fourteen thousand tons, annually.

At Fahlun, in Sweden, is the most celebrated copper mine in the world, which has been worked for nearly a thousand years. The ore is found, not in veins but in masses, and the beds are not above a mile in circumference. The mine has many shafts and galleries, and at the deepest part is 1,020 feet below the surface of the earth. The mine is private property, and consists of 1200 shares. Four times a week the ore is divided: eleven equal heaps are formed, eight are distributed among the proprietors, and the three remaining heaps are sold at auction; one is appropriated to the repairs of the works; the second to pay the workmen, and the third to pay the expenses of making new excavations.

The ore is first roasted in the open air to deprive it of the sulphur; this operation is repeated five times, and it is then smelted. The copper is then forwarded from Fahlun to Afsta, in blocks, in a very impure state. Here it is put into furnaces in the ground, the ingots of copper being mixed up with charcoal. The fire is kept at an intense heat by bellows worked by

water-power till the ingots are entirely melted. After this the bellows continue to play for a long time, fresh charcoal being added as often as is requisite. The fluid metal is occasionally skimmed of whatever dross swims on the top. After being kept a sufficient time in a state of fusion, the bellows cease playing, and a quantity of water is thrown on the melted copper, which not being able to evaporate instantaneously, rolls backward and forward on the surface in small drops. This water chills the top of the metal and forms a crust, which is taken off with iron instruments, forming a sheet of copper. Water is again thrown on, and a second crust is formed and taken off; this is repeated till the furnace is empty, frequently producing forty crusts or round sheets of copper, the last of which are always the purest and best.

The metal has to undergo still another fusion. A great number of the sheets are put into furnaces, where, after melting, the copper is dipped out with large iron spoons suspended on levers by chains, and poured into moulds. The masses before they are entirely cold are placed on anvils and beaten flat by trip-hammers. They are afterwards cut into narrow plates and passed between rollers to make them even and of equal thickness.

Brass is manufactured at Afsta by the following process. They have three subterranean furnaces, each furnished with a lid. Into these furnaces they let down, with large hooks, very deep crucibles filled with copper and lapis calaminaris. After remaining for some time they are drawn up, and the melted contents poured into very flat moulds where the metal is formed

into sheets. Some of these are cut into long strips which are put to heat again in a large oven, after which they are drawn through gauges till they are reduced to wire.

The water which is pumped out of the mines of Fahlun is strongly impregnated with blue vitriol, or sulphate of copper. Large quantities of copper are obtained by placing pieces of iron in troughs filled with this water. The process is extremely simple and common in chemical experiments, but one which has led ignorant persons to believe that the iron is changed into copper. The water having a stronger affinity with iron than with copper, dissolves the particles of the former and precipitates a proportionate number of those of the latter before held in solution, which assume the places of the particles of iron previously dissolved; and as this operation is constant and gradual, the pieces of iron are entirely encrusted with copper, and appear converted into that metal.

The mines of Fahlun, are said to have formerly produced eight million pounds of pure metal, annually, but the amount is now considerably reduced. There are other prolific mines in Sweden, and the metal is also produced in Saxony, Russia, Persia, Japan, China, Chili and Peru. The copper mines of Japan are among the richest in the world. Large masses of copper have been found around the shores of Lake Superior; but no mines are wrought in the United States. A great quantity is imported into this country in the form of bars and pigs, from Peru and Chili, and in sheets from England.

SILVER MINES.

SILVER is generally found in mines which traverse the primary and older secondary rocks. In some cases, large masses of the pure metal have been found; but in general, it is in the state of ore, in which the silver bears a small proportion to the stony substance with which it is mixed.

This metal is found in Asia, Europe, and South America. The most celebrated mines are those of Mexico, Peru, Bolivia, and Chili. There are also valuable mines at Kongsberg in Norway, Friburg in Saxony, in Sweden, Russia, Spain, and Hungary. Those of Chemnitz and Cremnitz, in the latter country have been worked for a thousand years. The silver mines of Asia are in Armenia and China. This metal is not found in Africa.

Gold and silver have been in request from the earliest ages, and they are still sought for with an avidity which triumphs over every obstacle. The description of one of the mines, where the latter metal has been sought for many years, will give some idea of the patient labor and indomitable enterprise which have been bestowed in procuring it. The traveller Reynard gives us the following account of one of the mines in Sweden. "Salberg is a little village two days' journey from Stockholm, and one of the most delightfully situated places in the country. The silver mine has three large mouths, but the bottom is too deep to be seen. A tub attached to a cable is used for the purpose of descending this abyss, and it is lowered and

hoisted by a very curious machine driven by water. The extent of the danger may easily be conceived, when a person must descend in this manner with only one foot in the machine, and his life depending on the strength of a rope. A satellite, black as a devil, holding in his hand a torch of pitch and rosin, descended with us, and screamed out an air so melancholy, that it seemed to have been made on purpose for the infernal descent. About half way down we felt great cold, which joined to the water that fell upon us from all quarters in torrents, roused us from the lethargy into which we had fallen on entering these subterranean regions. We at length reached the bottom of the gulf after half an hour's journey. Here our fears and gloomy feelings vanished; we no more beheld anything frightful; on the contrary, everything was brilliant.

"We then descended still further below ground for the purpose of visiting a saloon, the roof of which is supported by several columns of silver, with which metal everything is covered. Four spacious galleries disclose themselves, and the reflection of the lights which shone on all sides, and dazzled our eyes by reflection from the vaults of silver and a clear rivulet which ran at their foot, did not tend so much to give light to the workmen as to render this abode more magnificent than the palace of Plato. Men of all countries are to be seen in these galleries; some draw carriages; others roll stones; and others are tearing the rocks asunder. There is a town below a town, containing houses, taverns, stables, horses, &c.; and what is very remarkable, there is a mill in the bottom of this gulf which raises the water out of the mine.

“The first stones taken out of the mine, are dried in a furnace which burns very slowly, and which separates the antimony, arsenic and sulphur from the stone, the lead, and the silver which remain together. This operation is followed by another in which the dried stones are thrown into triangles, and piled on each other to be pulverized by large hammers, set in motion by water. The pounded ore is kept in a stream of water, which runs constantly over a large cloth placed in a sloping position; by this means all the thick and earthy matter is carried off, while the lead and silver remain at the bottom. It is afterwards removed and thrown again into a furnace which separates the silver from the lead; this last is converted into scum.”

The richest and most famous mine in the world is the silver mine of Potosi in Peru. The place is thus strikingly described by the traveller Temple. “Suddenly appeared before me in the distance, a high mountain of a reddish brown color, in the shape of a perfect cone, and altogether distinct in its appearance, from anything of the kind which I had ever seen. There was no mistaking it;—it was that mountain which was made known to the world by the merest accident;—by an Indian who in pursuit of a llama up a steep, to save himself from falling, caught hold of a shrub, which being torn from the soil, exposed a mass of solid silver at the roots. It was that mountain, incapable of producing even a blade of grass, which yet had attractions sufficient to cause a city to be built at its base, at one time containing a hundred thousand inhabitants;—it was that mountain whose hidden treasures have withstood the laborious plunder

of two hundred and fifty years, and still remain unexhausted.

“ The height of the Cerro del Potosi has been ascertained by Dr. Redhead, to be 15,981 feet above the level of the Pacific Ocean; and the town of Potosi is situated at an elevation of 13,265 feet above the same level, being probably the highest inhabited place upon the globe. On the side next to the town, and at the foot of the great mountain, rising, as it were, against it, is a smaller, called by the Indians *Huagua Potocsi*, (son of Potosi, or Potosi the younger.) It facilitates the ascent to, but does not partake of the riches of the former, almost every stone of which is in some degree metalliferous. There are however in the small mountain, some mines from which considerable quantities of silver have been extracted. In the large one there are not less than five thousand *bocas minas*,—mouths of mines,—but it does not follow that there are five thousand distinct mines, for several have two and some three different mouths or entrances. This may convey a tolerably fair idea of the manner in which the *cerro* is perforated. But no idea can be formed of the nature and state of the mines themselves, which have been worked from their discovery to the present day, without the slightest regard to method, or even common convenience. I entered several in which I was obliged to crawl for many yards on my hands and feet. An estimate may thence be formed of the disadvantage at which the laborers work, and of the great loss of time that must ensue in conveying the ores out of the mines in sheepskin aprons, as practised by the Indians.

“ As many Indians as can work in the space within the mine are employed with implements and gunpowder, in detaching the ore from the veins. The pieces so detached are carried out to the mouth of the mine where they are broken to small and nearly equal sizes, resembling the stones for repairing roads upon Macadam's principle. In this state, they are put into sacks and conveyed to the *ingenio* (the laboratory or amalgamation works,) upon asses and llamas, the former carrying 125 pounds each, and the latter half that quantity. If the ore is quite dry, it is discharged into a store-house ; if wet or damp, it is spread in a place called *pampeo*, where it is exposed to the sun till dry. It is next pounded to powder by a heavy and awkward stamping-mill, moved by a water-wheel, after which it is passed through wire sieves. The men attending this last operation are obliged to stuff their nostrils and ears with cotton, and wear a sort of mask to protect them from the noxious dust, which is so injurious to health, that the place where the sifting is carried on is jocularly called *matagente*—the ‘kill-people,’ and a serious joke it has proved to the poor Indians for the last two hundred and fifty years.

“ The pulverized ore is then carried to the *buitron*, a large horizontal pavement where water and salt are thrown upon it, to which when the mixture is fully performed, quicksilver is added, according to the judgment of the *beneficiador* or ‘amalgamator,’ who, previous to these operations, assays the ore and ascertains its richness, which enables him to judge with precision the quantity required, and which is graduated according to the richness of the ore. A

great part of this quicksilver is subsequently recovered, but the ascertained certain loss is a pound of quicksilver for every pound of silver. The ore then goes through a further process, with the addition of lime, tin, vitriol, &c., after which it is worked, and the quicksilver is driven off by the heat of a furnace, leaving a solid mass of pure silver."

According to the account of Humboldt, there were 5000 mining establishments in Mexico at the time of his visit. The mines wrought by these are from 3 to 4000. One of them in the district of Guanaxuato, is from 130 to 148 feet wide, and has been traced and worked to an extent of eight miles. The average richness of the ore in Mexico, is about four ounces of silver to 102 pounds of refuse.

The produce of the Mexican mines was estimated 40 years ago, at about 24,000,000 of dollars, annually, nineteen twentieths of which was silver. The silver mines of Chili, Peru, Buenos Ayres, and New Grenada, were supposed by Humboldt, at the same period, to yield about 10,000,000 dollars annually. The annual produce of the gold and silver mines of all America, he estimated at 9,243,750 sterling, and that of the mines of Europe and Asia, at 1,000,000 sterling. Since that time, the product has decreased, and M'Culloch reckons the present annual supply of all the gold and silver mines of Europe and America, at between 30 and 35 millions of dollars. This diminution is in silver only, for the quantity of gold has increased in the last few years.

The use of silver is not confined to coin, but it is largely employed in the arts. In Great Britain,

the annual consumption of silver amounts to about 4,000,000 of dollars; 500,000 ounces are annually used for watch cases, and 900,000 ounces by coach-makers, harness-makers, and iron mongers. The value of the silver at all times in the hands of the manufacturers there, is estimated at 16,000,000 of dollars. The annual consumption of gold and silver in Europe and America, for ornamental purposes, is valued at 30,000,000 of dollars. The whole coin of Europe and America, in gold and silver, is reckoned at 1400,000,000 of dollars, and the value of ornaments and utensils of the same metals, at 1900,000,000 of dollars.

Notwithstanding the almost inconceivable value attached to these masses of silver and gold, it is probable that they are really of no benefit to the world. They are obtained at the expense of immense toil, severe privation, and prodigious waste of life. The same labor bestowed upon the pursuit of humbler minerals, or even in agriculture, would doubtless have yielded more solid advantages to mankind.

As to the effect of mining upon those engaged in it, we have the following testimony in Smith's Peru. "The miner," says he, "is generally a reckless gambler, who spends money as fast as it comes to him, not in improving his mines, but indulging his vices; and in this manner, the interest of the first *habilitadors* may be successively postponed to the claims of the most recent, who frequently is disappointed in his turn; while the difficulties of the miner are not removed, but prolonged, and he is involved in everlasting disputes and litigation."

GOLD MINES.

GOLD is sometimes found like silver, copper, and iron, in rocky beds, and in the state of ore ; but it is generally obtained in alluvial districts, in the shape of small scales, grains, and lumps, rounded by the attrition of water. This is called stream gold, and seems to have been produced from the disintegration of rocks. It is found in the beds of many rivers, but the chief localities where it is obtained in any considerable quantities, are Mexico, Peru, Chili, Buenos Ayres, Brazil, Russia, Hungary, Sweden, Japan, Borneo, Africa and the United States.

Lumps of gold nearly pure and of very large size, have been found in different parts of the world ; masses weighing 20 pounds, have been met with in the Ural mountains ; one weighing 25 pounds, was found in Colombia, and one weighing 45 pounds was obtained in La Paz. The value of the latter was over 9000 dollars. In the early ages of the world, it is probable that such masses were common ; and from the immense amount of the precious metals in use in Peru and Mexico, at the time of their discovery, there is no doubt that both silver and gold were obtained on the surface of the earth in large quantities.

The gold mines of Mexico produce about one million of dollars a year ; those of South America yield 4 millions ; those of the United States, in Virginia, N. Carolina, S. Carolina, and Georgia, 1 million ; those of Europe, 4 millions ; those of Asia, 7 millions. It must be admitted, however, that these calculations are very uncertain. Of the gold obtained from Africa we

have no estimate. The quantity of gold coined at the London mint in 1829, amounted to 200 millions of dollars.

The uses of gold beside that employed for coin, are numerous. Its flexibility and softness have led to its extensive adoption in the form of gilding, and a large amount is consumed in the manufacture of gold leaf. Two ounces of gold are beaten into 2400 leaves, these being each but the one hundred and fifty thousandth part of an inch thick. It may however be made much thinner. It is said that gold to the value of 300,000 dollars is annually converted into leaf in Great Britain!

The process of seeking for gold is seldom by mining into rocks; but generally by washing or picking among the sand. Notwithstanding the immense amount actually obtained, it may still be doubted whether the gold mines now wrought, actually pay the expense of the working; if they do, it is still certain that the same industry and enterprise devoted to other objects, would be much more productive to those employed, as well as more useful to mankind.

PLATINA MINES.

THIS metal, which is even heavier and more costly than gold, is found in small quantities in South America, Spain, and the Ural mountains. It is chiefly obtained from the latter place, and Russia, to which country the mines there belong, has recently issued small coins of this metal, which is the only instance of its being used for this purpose. In 1830, the Russia mines yielded 4200 pounds, in weight.

Platina is of a silvery whiteness, but not brilliant ; it is very ductile and has been reduced to wire of the thirty thousandth part of an inch in thickness. It is found in grains, and one lump has been discovered weighing about twenty pounds, which is deposited in the museum at St. Petersburg. The chief uses of platina, are in the arts, it being fitted to certain purposes by its peculiar chemical qualities.

DIAMOND MINES.

It is a familiar fact that the diamond is the most brilliant, beautiful and precious of all stones. On account of its extreme hardness, the art of cutting and polishing it was for a long time unknown in Europe. But in 1456, a young man of the name of Louis Bergher, of Bruges, is said to have constructed a polishing wheel for the purpose, which was fed with diamond powder instead of *corundium*, which the Chinese and Hindoos had long been accustomed to employ. Bergher was led to this discovery by observing the action produced by rubbing two rough diamonds together.

For estimating the value of fine diamonds, there is no fixed standard. Rough diamonds, selected as fine, and well-formed for cutting, may be estimated as follows. Square the weight of the stone in carats, multiply the product by two, and the result will give the value in pounds sterling. Brilliants, if fine, may be estimated by squaring the weight and multiplying the product by eight, which will give the value in pounds.

A very large amount of property in Europe, to say nothing of other parts of the world, is invested in diamonds; and it is worthy of remark that the price of these gems has not only been rising gradually for several years, but is likely to continue on the advance. This is owing to the fact that the diamond mines of the East are unproductive, and even those of Brazil have begun to show symptoms of exhaustion.

Diamonds are not used exclusively as articles of ornament or luxury, but are employed with great advantage in the arts. The inferior kinds are sold to break into powder, and may be said to have a more extensive sale than brilliants with all their captivating beauty. In many operations of art they are indispensable. The fine cameo and intaglio owe their perfection to the diamond, with which alone they can be engraved. The beauty of the onyx would yet remain dormant had not the unrivalled power of the diamond been called forth to the assistance of the artist. The carnelian and the agate cannot be engraved by any other substance.

Diamond mines exist in Hindostan, the island of Borneo, and Brazil. The most celebrated of the former country is that of Golconda, now called Hyderabad, which, however, is no longer very productive. Tavernier, who visited this mine, gives the following description of it. "All round the place where the diamonds are found, the earth is sandy and full of rocks and coppice woods, nearly similar to the environs of Fontainebleau. In these rocks are many veins from half an inch to an inch broad. The miners have little iron rods, bent at the end, which they thrust into these veins to draw out the sand and earth; this they

put into vessels, and it is among this earth that the diamonds are found. As the veins are not always regular, but run up and down, they are obliged to break the rocks in order to follow them. After the earth is collected, they wash it two or three times, and the diamonds are discovered. The traffic here is carried on with liberality and good faith. On all the diamonds that are sold, a duty of two per cent. is paid to the king of Golconda, who also derives a revenue from the merchants for permission to dig in the mines.

The merchants pay to the king at the rate of four pagodas a day for a hundred miners employed by them. But these poor people get no more than three pagodas a year, and must be expert in their business to acquire even that. As their wages are so small, they have no scruple in embezzling what they can. Sometimes they hide a diamond among the sand; and sometimes, as they are entirely naked with the exception of a small cloth round the waist, they dexterously contrive to swallow them. The chief of the merchants one day pointed out to me a miner who had worked with him for several years, and who had secreted a stone which weighed a *mergelin*, being nearly equal to two of our carats. He had hidden it in the corner of his eye, from which it was taken on discovering the theft. To prevent such knavery, over every fifty miners there are always twelve or fifteen persons employed to see that they steal nothing. If they, by chance, find a stone that weighs above seven or eight mergelins, they carry it to the head miner, who rewards them for it.

It is a pleasing sight in the morning to see the

young children of the merchants and others, from the age of ten to sixteen, all assembled under a great tree in the market place, each with a quantity of diamonds in a little bag hung on one side, and on the other a purse fastened to his sash, in which some have from five to six hundred pagodas of gold. There they sit waiting till some person comes to offer them diamonds for sale. When anything is brought, it is put into the hands of the oldest, who is regarded as the chief of the band; he examines it and puts it into the hands of the next, who passes it to a third; and in this manner it goes on from one to another till it returns to the first, without a word being uttered by any one. He then inquires the price of the seller, and buys it if he thinks fit; but should he pay too much for it, the loss is his own. When evening comes, these children bring together all they have bought in the course of the day, and after examining the different stones, separate them according to their water, weight and clearness; then they affix on each a price at which they judge they can be sold to strangers, and by comparing this with the cost, they see what profits have been made. Lastly, they carry them to some of the great diamond merchants; they dispose of them and divide the profits, only the chief of the company receives one quarter per cent. more than the rest. Although so young, they are nevertheless such good judges of the value of stones, that if one of them should purchase anything on which he is willing to lose half per cent, there is always some one ready to give him the money; and in offering them a dozen stones, they seldom fail to select four or five with some flaw, or speck, or defect in the corners.

Here I must remark the singular manner in which the Hindoos, idolaters as well as Mohammedans, dispose of any sort of merchandize. Not a word is spoken during the bargain, but all passes in profound silence. The seller and buyer sit opposite to each other like a couple of tailors, and one of them opening his sash, the seller taking the right hand of the buyer, covers it with his, under which, in the presence of as many other merchants as happen to be in the same room, the bargain is concluded without any one of them knowing the terms. The buyer and seller, making use of neither mouth nor eyes, carry on the traffic with their hands only, which is done in the following manner. When the seller takes the whole of the buyer's hand, it signifies a thousand; and as many times as he presses it, so many thousand pagodas or rupees are signified. When he takes the five fingers only, it signifies five hundred, and one finger, one hundred. When he takes half the finger, just by the middle joint, he means fifty, and the tip of the finger goes for ten. This is all the mystery used by the Hindoos in their traffic; and it often happens that at a place where there are several people together, one article is sold seven or eight times without any one of the company except the bargainers knowing any thing of the matter."

Goa was formerly the greatest mart in Asia for diamonds, rubies, sapphires, topazes, and other stones. To this place all the miners and merchants resorted to sell the finest productions of the mines, being here at full liberty to dispose of them as they pleased. Whereas in their own country, upon showing them to

the king or prince, they were compelled to accept whatever he chose to give them. Goa was also famous for the great trade carried on in pearls, both from the Persian Gulf and from Ceylon.

Since the diamond mines of India have become nearly exhausted, Brazil has supplied nearly the whole world. The stones are found in the beds of rivers in the district of Sejucó, which is better known as the "Diamond District." At first, the search was prosecuted by private adventurers, but the government finally monopolized the business, and the whole district was placed under peculiar laws and regulations. If diamonds were found in gold washings, the adventurers were obliged to abandon the works to the government, and very severe measures were adopted to repress the illicit search,—banishment to Africa, or imprisonment for life, with confiscation of property, being the punishment annexed to this offence; but these severe penalties could not repress a traffic which afforded so many facilities for evasion.

When Mr. Mawe, the mineralogist, visited the "Diamond District," about two thousand negroes were employed, divided into parties of about two hundred each, under a sub-administrator and overseers. The mode pursued was to turn the channel of the river, in whose bed the precious stones were concealed, and after removing the mud, to dig up the channel and remove the material called *cascalho* for washing.

When a negro finds a diamond, he rises up and claps his hands, and one of the overseers receives the gem, all which are found during the day, being taken at night to a superior officer, who weighs and regis-

ters them. A negro who finds a diamond weighing seventeen and a half carats receives his freedom, and premiums are given to the discoverer of smaller stones. To prevent collusion and concealment of diamonds, the negroes, at a given signal, remove into different troughs several times in the course of the day.

The diamonds in the treasury of Sejuco are kept in chests under several locks, the keys of which are entrusted to different officers, and are sent annually under a military escort to Rio Janeiro. The soldiers who perform this duty are selected on account of their good character, and when not thus employed, they are engaged in protecting the places which are known to contain precious products. The journey from Sejuco to Rio Janeiro occupies about a month. The average quantity of diamonds obtained from the "Diamond District," when it was visited by Mr. Mawe, was from twenty to twenty-five thousand carats, and the total quantity obtained in Brazil was about thirty thousand carats. Mr. Mawe was shown the diamond treasury at Rio Janeiro which contained from four to five thousand carats. The largest diamond yet known, which weighed, in its unpolished state, one hundred and thirty-eight and a half carats, was discovered in 1791, in the Rio Abaite, adjoining the district of Sejuco. If estimated at the standard at which smaller diamonds are valued, it would be worth £5,644,800.

The Mogul diamond weighs 280 carats; the Russian, 195; the Austrian, 139. The French cost \$600,000; the Russian was the eye of an Indian idol, but it was stolen and sold for \$400,000 and \$20,000 annuity.

The Austrian was bought at a stall as a piece of rock crystal. The largest polished diamond that is known, belongs to one of the princes of Borneo.

SALT MINES.

SALT is universally distributed throughout the ocean, and is found mixed in greater or less quantities, in almost all soils. There are also beds of *rock salt*, which are quarried like other mines, by digging and blasting. The mines near Norwich, in England, have been wrought for 200 years, and are probably the most productive in the world. Beside these mines, there are extensive salt springs, where salt is made by evaporation. It is estimated that 363 million pounds of salt are used in Great Britain annually, beside which, they export almost 500 million pounds!

Salt is manufactured along the maritime shores of most countries, from sea water, by evaporation; it is also procured in large quantities from salt springs. These of Salina, in New York, yield about four millions of bushels a year, beside which, there are other extensive works of the same kind in the United States.

In Spain, near Cardona in Catalonia, is a mountain of nearly pure salt, 500 feet high, and three miles in circumference. The mineral is of various colors, though generally white. It is wrought into vases, candlesticks, and various toys and utensils. In differ-

ent parts of the world, there are also numerous beds of rock-salt, and in some places the earth is encrusted with it for many square miles.

The salt mines of Salzburg in Austria, are extensive, and consist of thirty-three chambers, excavated in a mountain; some of them one over the other. The waters frequently reach into these apartments, and then the men are obliged to work naked nine hours a day, to stop the leaks; they cannot wear clothes, for they become impregnated with salt, and are as stiff and hard as boards. The pay of the miners here is eight cents a day! It is a curious fact relating to the mines in this quarter, that the salt rock grows from year to year! It gains about three feet in forty years. The excavations of the mines of Salzburg are 6,000 feet in length, and 942 deep.

The traveller Reynard, who visited the celebrated salt mine of Wiebiska near Cracow in Poland, gives us the following account. "In the middle of the square of the city stands a shed, into which you enter and behold a large wheel which horses are turning to draw stones out of the mine. Near this wheel is the mouth of a large pit with a covering of plank and timber; and here we began our descent into the abyss having first been robed in a kind of surplice. A great number of ropes and girths attached to the main cable were set in motion, one after the other. Five or six men made preparations to go down with us, and lighted a number of lamps, while others surrounded the mouth of the pit, and began to sing that part of the Passion containing the words *Expiravit Jesus*, and continued in the most frightful tone with the *De Pro-*

fundis. All this time, I confess my blood ran cold, and I imagined I saw preparations going on for a living interment. I wished myself a thousand miles off, but the matter had gone too far, and down I must go. One of the guides fixed himself on the lower end of the cable with a lamp in his hand. I then took my station on the girth above his head. One of the miners placed himself above me; my comrade was above him; another was over his head with a lamp in his hand, and another above him; so that there were more than a dozen of us fixed on the cable like a string of beads, in a posture far from being the most desirable in the world; for we ran the risk not only of the cable's giving way, but also of the snapping or slipping of the girths by which we were attached to it.

We descended seven hundred feet or more in this manner, and we at length found ourselves in a very spacious excavation, in the middle of which stood a chapel. From this place we were conducted all around through the mines, by roads without end, where they had removed the salt which they cut out in large blocks, one of which three horses can with difficulty draw. This stone is of an ash color, and sparkles like diamonds. It is not very hard, and the fragments which fall off in cutting are put into barrels, and sold in that state. It is saltier than common sea-salt, and grows white by being piled up. They make a salt too of the water drawn from the deepest part of the mine, which on hardening, becomes the whitest and finest in the world.

From this quarry, we descended to another, for there are seven of them, one above another. Near the

lowest, we found a rivulet of fresh water, the best I ever drank. It is one of the greatest curiosities in the world, to behold a stream of water issuing from and running over stones of salt without imbibing the taste of it. There are also other rivulets here, but their waters are perfectly salt. After having descended for two hours, we at length reached the lowest quarry, where the miners were at work. They cut out for us to see, a stone of salt which fifty horses would have been unable to draw; but a single man severed it from the rock with great ease. When this mass had fallen, they cut it into round pieces shaped like a barrel, for the convenience of rolling. We found in this pit a number of men and horses, who were working at wheels for the purpose of raising water. We travelled nearly four hours in this mine, and were assured that so great is its extent that it could not be traversed in every part in less than fifteen days. Along the whole length of the vaults, salt stalactites may be observed hanging like icicles from a rain-spout, and when they have grown hard enough to be wrought, the miners work them into chaplets and other utensils and ornaments."

MINES OF TIN, LEAD, QUICK-SILVER, &c.

TIN.—This useful mineral is always obtained in the state of ore. The chief mines are those of Cornwall, in England, where it is found with copper and lead,

and in Borneo and the adjacent regions. None is found in the United States. Considerable quantities are obtained in Bohemia, Saxony and Silesia.

The tin mines of Cornwall, resemble those of copper already described. The annual product of these, is about nine millions of pounds.

LEAD.—This mineral is rarely found in a pure state, being usually met with in the form of an ore. It is found in a great variety of combinations and in vast abundance.

Great Britain abounds in this mineral, and yields three times as much as all the rest of Europe. The mines are scattered over various parts of the kingdom, and produce about 47,000 tons, or nearly 100 millions of pounds, annually.

Lead is found in various parts of the United States, but the chief mines are those of Missouri and Fever River, which yield from six to ten millions of pounds a year.

MERCURY, or quicksilver, is one of the most curious of minerals. At common temperatures it is liquid; but Pallas saw it frozen as hard as tin, the thermometer standing at 80° below zero. It boils at 662° , three times the heat of boiling water. If placed on the hand in a lump, it produces a burning sensation, and if permitted to remain, causes a blister. Its chief use is in the arts, and especially in making gauges of the weather.

Quicksilver is sometimes found pure, but it is usually obtained in the form of ore. The chief mines now wrought, are in Spain and Austria; those of South America are now unproductive. The Spanish

mines of Almaden, produced, in 1833, 2,244,000 pounds. About 700 persons are employed in the operations under ground, and 200 in separating the metal from the ores.

ZINC.—This metal is always found in ores, of which there are many varieties. Small quantities are met with in Great Britain, but the chief sources of supply are in Germany and Belgium.

GENERAL REMARKS ON MINES.

It would be easy to extend our account of mining operations, and to present the reader with a great variety of curious and interesting particulars; but our space allows us only to exhibit the prominent topics connected with the subject, to which we may add a few curious particulars.

The copper mines of Cornwall, in England, are on an extensive scale, and nowhere in the world, do the wonders of mining more forcibly strike the beholder. One of the mines, eight miles from Falmouth, employs 2,200 persons; and the whole country around, presents a vast scene of industry, with houses, cottages, mining machinery, &c. In these mines, the larger pieces are broken by women, after which, they are crushed in a mill, and then smelted.

Near the Land's End, is a mine which was wrought to a great distance *under the sea*. The rock was blasted within two feet of the ocean, which was ascertained by boring through. When the waves were

dashed upon the shore by a storm, the roar over head was terrific.

The "Levant mine," which is still wrought, is over a thousand feet deep, and extends far under the bed of the ocean. This furnishes copper, iron and tin. Twelve miles from this, is the tin mine of Huel Vor, 1200 feet deep. The water is here pumped out by a stupendous steam engine; the rushing sound produced by this process, reverberating in the caverns of the mine, is said to be in the highest degree appalling to a novice.

Many curious superstitions exist among miners; among those of Cornwall as well as Mexico, no person is allowed to whisper, as it bodes bad luck; though any one may sing as loud as he pleases. If a man is killed, they speak of it in the soft phrase, *he fell away*. In some districts, none of the miners will work, when any one of their number has died, till the funeral is closed.

In the mining districts of England, houses are often undermined, and one side sinks, so as to make the buildings seem as if about to be capsized; still the people inhabit them till they tumble upon their heads. Many such houses are to be met with, showing how little danger is regarded, when people become familiar with it.

A traveller in Mexico tells us that in one of the entrances to the Valenciana mine of Mexico, sixty fathoms down, there is a church where the lamps are kept continually lighted. Here the miners spend half an hour, going to and coming from their work, in their

devotions, and in singing. The same writer thus describes the condition of the miners :

“ Their houses and clothing are of little value ; the former for the most part being miserable huts, which it would be no hard task to erect in a single day. In families of seven or eight individuals, the furniture, cooking utensils, in short, the whole contents of several huts belonging to the laboring classes which we examined, we never found to exceed twenty shillings in value. Not one house in twenty contained either knife or fork, or spoon, and even in several whole villages, they could not be had. As for beds, they never think of such a thing, but lie down on the bare floor in the corner of the hut. The dress of the laboring man, when new, would be thought dear for six shillings, and this he wears at all times, and in all places, in the mine and out of it, on Sunday as well as every other day, and at night it serves both for beds and bed-clothes, until torn off piece by piece.”

In some cases, the miners spend the whole week in the mines, from Monday to Saturday ; and in others, families—men, women and children—dwell ; here people are born and here they die ; and here nearly the whole lives of some persons are spent ! There are, no doubt, many thousands to whom the sun is a strange and unusual sight, and who might seem to be burrowing quadrupeds rather than human beings, made to walk upright in the light of heaven and the image of God. Of the thousands, nay millions, that have been made slaves and forced to sacrifice their lives in digging for silver and gold, by the Spaniards, we have no statistics ; nor will the misery these poor

creatures have suffered, be known, till the reckoning of the judgment day. It behoves the living generation of christian men, to see that a similar reckoning is not reserved for them, in the history of existing mines, where we know that humanity is reduced to a state of almost indescribable misery and degradation.



WOOD-CUTTING.

WE have already seen the operations of human enterprise and art in fishing, hunting and mining—but the forest is as important a source of comfort and luxury as any of these. The habitations of men, as well as the greater part of their furniture; many of the most useful utensils of refined, as well as barbarous life; the canoe of the savage, and the ship of the civilized; the fuel of a large portion of the human race; the greater part of the machinery of manufacturing countries—are dependent upon the vegetable productions of the forest. The spontaneous supply of such materials suited to the multiplied wants of man. is a theme which may well excite the grateful admiration of every reflecting mind.

This subject is too vast to be fully considered here: we shall only attempt to present one or two topics, which, however, may serve as an index to the whole.

LUMBER TRADE OF NORTH AMERICA.—The great forests of the continent of North America afford the most plentiful supplies of timber, from which not only our own country, but the British dominions in Europe and elsewhere, derive their materials for ship-building and other purposes. These supplies, of course, are obtained chiefly from those districts which lie near the

ocean, as the labor of transporting so bulky an article to navigable waters, constitutes the greater part of the expense of obtaining it. Great Britain procures her American timber from Canada and New Brunswick. The Atlantic states of the Union obtain their supplies chiefly from the forests of Maine. A valuable species of oak called "live oak," is produced in the neighborhood of Florida, and this is used chiefly in the construction of our ships of war. The State of North Carolina furnishes a species of yellow pine, and Massachusetts and New Hampshire abound with white oak, both of which are used to a great extent, in ship-building of all sorts.

The timber procured from the woods of Maine and New Brunswick, is chiefly white pine and spruce. The business of felling this timber and bringing it to market, is called "lumbering," the word "lumber" being an American appellation for boards and timber in a rough state. This business employs a large number of persons, both English and American. A "lumbering party" is composed of a certain number of persons either hired by a master lumberer, who pays them wages and finds them provisions, or of individuals who enter into an understanding with each other to have a joint interest in the proceeds of their labor. The necessary supplies of provisions, clothing &c., are generally obtained from the merchants on credit, in consideration of receiving the timber which the lumberers are to bring down the river the following summer. The stock deemed requisite for a lumbering party, consists of axes, a cross-cut saw, cooking utensils, a cask of rum, tobacco and pipes, a large

supply of biscuit, pork, beef, fish, pease, &c., for soup, with a cask of molasses to sweeten the beer which they brew from spruce and hemlock. Two or three yoke of oxen, with sufficient hay to feed them, are also required to haul the timber out of the woods.

When all is ready, the lumberers proceed up the rivers into the thickest of the woods, where they select a favorable spot for their work, which is as near a stream of water as possible. They begin by clearing away a few of the surrounding trees, and building a log hut, which is roofed with bark, and provided with a cellar for lodging such of their goods as are liable to injury from the frost. The fire-place is in the middle of the hut, and the smoke goes out through a hole in the roof. Hay, straw, or branches of trees are spread on the ground, on which they all lie down at night to sleep, with their feet to the fire which is kept constantly alive. One person officiates as cook, whose duty it is to have breakfast ready before daylight, at which time all the party rise, and each take his "morning," or the indispensable dram of spirits before breakfast. Immediately after this meal, they divide into three "gangs," one of which cuts down the trees, another hews them and the third is employed with the oxen in hauling the timber either to one general road leading to the banks of the nearest stream, or at once to the stream itself. The whole winter is thus spent in unremitting labor. The ground is covered with snow two or three feet deep from the beginning of winter till April, and in the midst of the woods till nearly the end of May. When the thaws come on in April, the rivers rise, or in the phrase of the lumber-

ers, the "freshets come down." At this time, all the timber cut during the winter, is thrown into the water and floated down the head streams, until the river becomes sufficiently wide to make the whole collection into rafts.

The construction of the vast masses of timber floated down the St. Lawrence, and other great streams of North America, is generally as follows. The raftsmen commence by floating twenty or more pieces of timber alongside of each other, with the ends in a line. These ends are then bound close together by placing logs across, and binding one log to another with poles and withs. The size of the raft is then increased by adding pieces of timber in the same manner, until the whole lot to be rafted is joined together in one flat mass. The water at this season is excessively cold, yet for weeks together the lumberers are in it from morning till night; and seldom less than six weeks elapse from the time that the floating of the timber commences, till the rafts are delivered to the merchants.

Hardly any course of life can more surely undermine the constitution, or be more injurious to health than that of a lumberer and raftsman. The winter snow and frost, although severe, are nothing to endure in comparison with the extreme coldness of the snow-water of the freshets, in which he is, day after day, wet up to the middle, and often immersed from head to foot. The very vitals are thus chilled and sapped. The intense heat of a summer sun, a transition which almost immediately follows, must further weaken and reduce the whole frame, and premature old age is the inevitable

fate of a lumberer. But notwithstanding all the toils of such a pursuit, those who once adopt this life, seem fascinated with it, and prefer it to any other. They are, in most respects, as independent as the Indians. After disposing of their rafts, they pass some weeks in idle indulgence, drinking, smoking, and dashing off in a long coat, dandy waistcoat and trousers, a handkerchief of many colors around the neck, a watch with a long tinsel chain and numerous brass seals, and an *umbrella*. At the end of the warm season they throw off all this finery, return to the woods and recommence their laborious occupation.

The American lumber, besides its domestic uses, is largely exported to the West India islands. Of the lumber from the British provinces, it is computed that the exportation into Great Britain employs 300,000 tons of shipping. The Americans export only sound timber and boards; but the most of the timber exported by the British is in the shape of rough logs.

LOGWOOD-CUTTING.—Logwood seems to have been first brought to England soon after the accession of Queen Elizabeth, but the various and beautiful dyes obtained from it, proved, by the unskilfulness of the dyers, of so little durability, that it soon fell into disrepute, and an act of parliament not only prohibited the use of it, but authorized the burning of the commodity wherever it should be found throughout the realm. It was not till the reign of Charles II., that the discovery of the method of fixing the colors of logwood brought it again into high esteem, and procured the repeal of the prohibitions respecting it. The best logwood in the world is that of Campeachy.

No other writer has given so good a description of this valuable article of commerce, and the manner of procuring it, as Dampier, whose account we shall here copy.

“After the English had taken Jamaica, and began to cruise in this bay, they found many barks laden with it, but not knowing its value then, they either set them adrift or burned them, saving only the nails, and iron work, a thing now unusual among the privateers, taking no notice at all of the cargo; till Captain James having taken a great ship laden with it, and brought her home to England to fit her for a privateer, beyond his expectations, sold his wood at a great rate, though before he valued it so little, that he burned of it all his passage home. After his return to Jamaica, the English, visiting this bay, found out the place where it grew, and if they met no prize at sea, they would return to Champeton river, where they were certain to find large piles cut to their hand, and brought to the seaside ready to be shipped off. This was their common practice, till at last the Spaniards sent soldiers there to prevent their depredations.

“But by this time the English knew the trees as growing, and understanding their value, began to rummage other coasts of the Main in search of it, till according to their desire they found large groves of it, first at Cape Catoche, which, as I have said before, was the first place where they settled to logwood-cutting, and loaded many vessels from thence to Jamaica and other places. But it growing scarce there, they found out the Lagune of Trist in the Bay of Campeachy, where they followed the same trade, and have

ever since continued it, even to the time of my being here. The land near the sea or the Lagunes, is mangrovy, and always wet, but at a little distance from it, it is fast and firm, and never overflowed except in the wet season. The soil is a strong yellowish clay, but the upper coat or surface is a black mould, though not deep. Here grow divers sorts of trees of no great bulk or height. Among these the logwood trees thrive best, and are very plentiful; this being the most proper soil for them, for they do not thrive in dry ground, neither shall you see any growing in rich black mould. They are much like our white-thorn in England, but generally a great deal bigger. The rind of the young growing branches is white and smooth, with some prickles shooting forth here and there, so that an Englishman not knowing the difference, would take them for white-thorns; but the body and old branches are blackish; the rind rougher, with few or no prickles. The leaves are small and shaped like the common white-thorn leaf, of a palish green.

“ We always choose to cut the old black-rinded trees, for these have less sap, and require but little pains to chip or cut it. The sap is white, and the heart red. The heart is used much for dyeing, therefore we chip off all the white sap till we come to the heart, and then it is fit to be transported to Europe. After it has been chipped a little while it becomes black, and if it lies in the water it dyes like ink, and sometimes it has been used to write with. Some trees are five or six foot circumference, and these we can scarce cut into logs small enough for a man's burthen without great

labor, and therefore are forced to blow them up. It is a very ponderous sort of wood, and burns very well, making a clear strong fire, and very lasting. We always harden the steels of our fire-arms, when they are faulty, in a logwood fire if we can get it.

“The logwood-cutters inhabit the creeks of the East and West Lagunes, in small companies, building their huts close by the Necks’ sides, for the benefit of the sea breezes, as near the logwood groves as they can, removing often to be near their business; yet when they are settled in a good open place, they choose rather to go half a mile in their canoes to work, than lose that convenience. Though they build their huts but slightly, yet they take care to thatch them well with palm, or palmetto leaves, to prevent the rains which are there very violent, from soaking in. For their bedding, they raise a barbecue, or wooden frame, three foot and a half above ground on one side of the house, and stick up four stakes at each corner, one to fasten their pavilions, out of which here is no sleeping for moschetoës. Another frame they raise covered with earth, for a hearth to dress their victuals; and a third to sit at when they eat it.

“During the wet season, the land where the logwood grows is so overflowed, that they step from their beds into the water perhaps two foot deep, and continue standing in the wet all day, till they go to bed again; but nevertheless account it the best season of the year for doing a good day’s labor in. Some fell the trees; others saw and cut them into convenient logs, and one chips off the sap, and he is commonly a principal man; and when a tree is so thick, that after

it has lodged it remains still too great a burthen for one man, we blow it up with gunpowder.

“The logwood-cutters are generally sturdy fellows, and will carry burthens of three or four hundred weight; but every man is left to his choice to carry what he pleaseth; and commonly, they agree very well about it, for they are contented to labor very hard. But when ships come from Jamaica with rum and sugar, they are too apt to mis-spend both their time and money. If the commanders of these ships are free, and treat all that come the first day with punch, they will be much respected, and every man will pay honestly for what he drinks afterwards. But if he be niggardly, they will pay him with their worst wood, and commonly they have a stock of such laid by for that purpose. Nay, they will cheat them with hollow wood, filled with dirt in the middle, and both ends plugged up with a piece of the same, drove in hard, and then sawed off so neatly that it is hard to find out the deceit. But if any man come to purchase with bills payable at Jamaica, they will be sure to give him their best wood.”

MAHOGANY.—This is the wood of a tree growing in the West Indies and Central America. There are two other species of *Swietenia* found in the East Indies, but they are not much known in this country.

The mahogany is one of the most majestic and beautiful of trees; its trunk is often forty feet in length and six feet in diameter; and it divides into so many massy arms, and throws the shade of its shining green leaves over so vast an extent of surface, that few more magnificent objects are to be met with in the vegetable world.

It is abundant in Cuba and Hayti, and it used to be plentiful in Jamaica; but in the latter island, most of the larger trees, at least in accessible situations, have been cut down. The principal importations into Great Britain are made from Honduras and Campeachy. That which is imported from the islands is called Spanish mahogany; it is not so large as that from Honduras, being generally in logs from twenty to twenty-six inches square, and ten feet long; while the latter is usually from two to four feet square, and twelve or fourteen feet long, but some logs are much larger.

Mahogany is a very beautiful and valuable species of wood; its color is red brown, of different shades and various degrees of brightness, sometimes yellowish brown; often very much veined and mottled, with darker shades of the same color. The texture is uniform, and the annual rings not very distinct. It has no large septa, but the smaller septa are often very visible, with pores between them, which in the Honduras wood are generally empty, but in the Spanish wood, are mostly filled with a whitish substance. It has neither taste nor smell, shrinks very little, and warps or twists less than any other species of timber. It is very durable when kept dry, but does not last long when exposed to the weather. It is not attacked by worms. Like the pine tribe, the timber is best on rocky soils, or in exposed situations. That which is most accessible at Honduras, grows upon moist, low land, and is, generally speaking, decidedly inferior to that brought from Cuba and Hayti, being soft, coarse and spongy; while the other is coarse-grained and

hard, of a darker color, and sometimes strongly figured. Honduras mahogany, has, however, the advantage of holding glue admirably well; and is, for this reason, frequently used as a ground on which to lay veneers of the finer sorts.

The best qualities of mahogany bring a very high price. Not long since, Messrs. Broadwood, the distinguished piano-forte manufacturers of London, gave the enormous sum of £3000, for three logs of mahogany. These were the produce of a single tree, each about fifteen feet long, and thirty-eight inches square; they were cut into veneers of eight to an inch. The wood was particularly beautiful, capable of receiving the highest polish; and when polished, reflecting the light in the most varied manner, like the surface of a crystal; and from the wavy form of the pores offering a different figure in whatever direction it was viewed. Dealers in mahogany generally introduce an auger before buying a log; but notwithstanding, they are seldom able to decide with much precision as to the quality of the wood, so that there is a good deal of lottery in the trade. Mahogany was used in repairing some of Sir Walter Raleigh's ships at Trinidad, in 1597; but it was not introduced into use in England, till 1724.

ROSEWOOD is one of the most beautiful and costly of the fancy woods; it is produced in Brazil, the Canary Isles, Siam, &c. The logs often are twenty-two inches in thickness. Considerable quantities are imported into this country, and 300 tons are annually sent to Great Britain.

AGRICULTURE,

INCLUDING the means of procuring every part of the produce of the soil, is the grand source of human subsistence; hence, are chiefly derived the materials used in the manufactures, and the objects, in the exchange of which commerce consists. The modes in which support is obtained from land are hunting, pasturage and tillage; the last being the only one in which labor is employed directly upon the ground itself, is more especially considered as agriculture.

Tillage is employed by all the more improved nations as the most efficacious means of drawing subsistence from the earth. In proportion to the general improvement which any people have attained, is usually the skill and diligence with which this art is practised. The community which derives its chief subsistence from the culture of the soil, merits generally the character of civilized.

The objects of culture vary exceedingly, and for the most part, according to the varieties of soil and culture. Grain, the main staff of human subsistence, forms everywhere the most extensive and most important object of tillage. Climate chiefly determines the grain cultivated in any particular region; in the tropical countries, it is rice; in the best parts of the tem

perate zones, wheat and barley; in the colder tracts, oats and rye. Of luxuries, wine and oil are in the most general demand; they are almost exclusively confined to the warmer regions of the temperate zones. The delicate fruits from which they are produced, do not flourish in the excessively luxuriant soil of the tropics. Here, however, the fragrant aromatic plants, and those filled with rich and saccharine juices, produce valuable substances that are eagerly sought after by the natives of less genial climates.

Europe, though settled at a later period than Asia and parts of Africa—though containing but one sixteenth part of the land surface of the globe, and but about one fourth of the whole population of the earth, still presents an amazing spectacle of wealth, industry and art, in its cultivated lands, its flocks and herds, and the annual products of its soil. The following table, which may be regarded as an approximation to the truth, is calculated to excite astonishment at the accumulative power of man.

Agricultural Statistics of Europe.

Cultivated lands, ...	100,000,000	acres.	
Arable lands, ...	372,145,000	"	
Meadows and pastures, ...	150,000,000	"	
Vineyards, ...	12,275,000	"	
Woodlands, ...	425,250,000	"	
Grain, ...	3,150,000,000	bushels, annually.	
Wine, ...	1,709,100,000	gallons	"
Horses and Mules, ...	26,417,600	owned at one time.	
Cattle, ...	70,270,974	"	"
Sheep, ...	170,577,220	"	"
Swine, ...	42,974,610	"	"
Goats, ...	6,513,225	"	"

Some parts of Europe have been cultivated for many centuries, but such is the skill of the husbandmen, that the oldest lands are sometimes rendered the most productive. In England, especially, the depths of chemistry have been explored, to discover salts and gases, which may be used as the means of resuscitating the jaded soils; and every kingdom of nature has been put in requisition to supply the fructifying principle. Not only the bones of animals are ground into powder and scattered upon the lands, but even those of the heroes who fell at Waterloo, it is said, have been dug from their "dread abode," and made to manure the fields of Britain.

Nor is even this all; the *guano* fever is not one of the least curious symptoms of this insatiate hunger and thirst of the exhausted English lands. Guano is the excrement of sea fowl, which, having accumulated for ages on certain lonely rocky islands, is found in almost exhaustless masses. There are large supplies of this along the western coast of South America, and it appears to have been used as a manure in the days of the Incas, by the Peruvians. Immense quantities of it have been shipped to England; but of late, the island of Ichaboe, on the south-eastern coast of Africa, has been the chief resort of English and American vessels for this article. The following account, written by one from the scene of action, is lively and graphic.

"Here I am in the father of all dunghills, an enormous mass of birds' manure, called guano, lying thirty feet deep on the island of Ichaboe. Conceive a barren, desolate, sandy coast; but *so* barren, *so* desolate, *so* sandy! without a soul, or a bush, or a stream near, where it never rains, where the dew wets you through,

where it is so cold one gets the horrors; where the air is so clear, that one cannot see the land till one is a mile or two off. An enormous surf beating over the shore, rocks, reefs, shoals, in all directions; conceive a barren rock of an island off this coast, to be covered to the depth of thirty feet, with a beastly smelling-bottle sort of mess, looking like bad snuff mixed with rotten kittens; conceive 132 ships lying packed between this island and the aforesaid sand and surf; fancy 132 masters of merchantmen, with 132 crews, and 132 sets of laborers, all fighting; conceive a gale of wind on the top of all this, and you will then only have half an idea of the rum place I have at last got into."

To this curious account, we might add many others, to show the blending of the great operations of agriculture, commerce and manufactures, and enabling us to see how they mutually aid and support each other. A single example will suffice. The article of flax seed is imported into Boston from Calcutta, where it is in part paid for in the manufactures of Lowell, spars and oars wrought from our forests, ice from the laboratory of our Yankee winter, and other articles. Flax-seed is also brought from Russia, our vessels taking sugar in the West Indies and exchanging the cargo at St. Petersburg. Flax-seed is also obtained from the Mediterranean, where it is purchased with raw cotton.

The seed thus gathered from various quarters of the world, is sent to some one of the mills, of which there are several in the country, where the oil, at the rate of, perhaps, 100,000 gallons a year, is pressed out, and the

"linseed cake," now almost as hard as rock, is shipped to London, where it is used in feeding milch cows and stalled cattle. Thus the infant of the British metropolis that takes its spoonful of milk, lays two hemispheres under contribution, and John Bull, in eating his beef stake, not only taxes the industry of his Yankee cousins—but makes the dusky children of Hindostan, the bearded cerfs of Russia, and the swarthy sons and daughters of the Levant, the tributaries to his pleasure. Thus it is, that humdrum husbandry, viewed in its thousand ramifications, opens trains of thought as wonderful as the revelations of Aladdin's magic lamp.

We now proceed to notice in detail, some of the more remarkable productions of Agriculture.

TEA.—This article is an original production of China, and the cultivation of it is still almost exclusively confined to that country. Attempts have been made to introduce the tea-plant into the East India islands, various parts of Hindostan, and Brazil, but with little success, owing, it appears, to the difference of the climate from that of China.

There are several species of the tea-plant; of which three principal ones may be particularized. First the *song-lo*, which grows in the mountainous district of Kiang-nan. Second, the *vou-y*, produced on the hilly tracts of Fo-kien. The two are well known to us under the appellations of *green* and *bohea* teas. The third species is the *pou-el*, and grows in the elevated regions of Yun-nan; but although this variety of tea is highly esteemed at Pekin, it has not been imported into Europe or America. In its general characteris-

tics, the tea-plant may be described as an evergreen shrub, which grows in the open air in that tract of climate comprised between the equator and the latitude of 45° , but the most favorable situation is between 25° and 33° . In appearance it somewhat resembles a myrtle, and bears yellow flowers extremely fragrant. About three years after it is planted, the leaves may be plucked for use. A few taken off early in spring, when they are first unfolded, are of exquisitely fine flavor. At subsequent periods, three crops are gathered, always diminishing in delicacy of flavor, but increasing in bulk. In this manner the black teas are separated into four qualities, peko, souchong, congo and simple bohea, and the green likewise into four, namely, gunpowder, imperial, hyson and twankay; the hyson is subdivided into hyson, young hyson, and hyson-skin.

In preparing the teas for market, they are made to pass through several processes. The leaves are separately worked between the hands, by which they are rolled into the curled shape in which they appear to us; after this they are separated into different lots according to quality. They also undergo two successive dryings, which in the case of the green, involve a very nice operation. The leaves are placed in iron pots, or vases, above a large fire, while a person continually stirs them with his hand to prevent their scorching. These labors are performed partly by the cultivators of the tea, and partly by the traders who resort to the tea-marts at particular seasons to make purchases.

Although we have specified certain localities for the

production of this plant, yet it is raised in greater or less abundance in every province of China, except the extreme north. Until recently the whole of the black tea was brought from the province of Fo-kien, and the whole of the green from Kiang-nan; but the cultivation of green tea for exportation is now extended to Tche-kiang, and that of black to Kuang-tung, or Canton. The Chinese tea-merchants generally begin to arrive in Canton early in October, with the crop of the season.

At the beginning of the present century, the quantity of tea exported from China, did not probably exceed thirty millions of pounds. For above a century and a half, the sole object of the English East India Company's trade with China, was the importation of tea into Great Britain. The association enjoyed this trade to the exclusion of all other British subjects, and were bound from time to time, to send orders for tea, and to provide ships to import the same, and always to have a year's consumption in their warehouses. The only port at which tea could be admitted into Great Britain, was London. The sales took place every three months, and the Company was bound to sell the teas to the highest bidder, provided an advance was offered of one penny a pound on the price at which each lot was put up, which price was determined by adding together the precise cost at Canton, and the charges of freight, insurance, interest on capital, and other necessary expenses; but by the mode of calculating these items, and the heavier expenses which always attend every department of a trade monopoly, the ultimate prices were greatly enhanced. In 1834, the monopoly of the East India Company was

abolished, and tea is now imported by private merchants into all the large seaports of Great Britain.

The tea-plant is to the Chinese in a great measure, both in culture, trade, and consumption, what the vine is to the people of Southern Europe; coffee to the Arabians, and the sugar cane to the inhabitants of the West Indies. The consumption of tea in China is immense. Every district generally speaking produces its own supply, though only the finest teas are consumed by the wealthy. The exportation from Canton may be estimated at 50,000,000 pounds annually, and 6,500,000 pounds are exported by land to Russia. The greatest consumers of tea out of China, are the English, and next to them the Americans. In Great Britain are consumed annually 30,000,000 pounds; in the United States, 8,000,000; in France, 2,000,000; in Holland, 2,800,000. The proportion of black to green tea consumed in England, is as 5 to 1; but in the United States, the use of green tea is the greatest.

SUGAR.—The sugar cane was first made known to the western parts of the world, by the conquests of Alexander the Great. Strabo relates that Nearchus, his admiral, found it in the East Indies, in the year 325 before Christ. Varro who lived B. C. 68, describes sugar as a fluid pressed from reeds of a large size, sweeter than honey. Dioscorides, somewhat later, says “there is a kind of honey called *saccharon*, which is found in India and Arabia Felix. It has the appearance of salt, and is brittle when chewed.” He also specified its medicinal qualities. Galen prescribed it as a medicine. Pliny mentions Arabia and India, as the countries which produced sugar, and

there is the strongest reason to believe that the sugar cane is an indigenous plant in some part of the East Indies. Marco Polo relates that sugar was raised in abundance in Bengal, in the thirteenth century; and Vasco de Gama in 1497 found a considerable trade in the article at Calicut.

Sugar appears to have made its way into Europe about the time of the crusades. The first circumstantial account of it, is by Albertus Agnensis, who wrote about the year 1108. He informs us that "sweet honeyed reeds" called *Zucra*, were found by the crusaders growing in the meadows near Tripoli. These reeds were sucked by the soldiers, who highly relished their sweet taste. He describes also the process of making the sugar by crystallization. It is very difficult to trace the progress of the introduction of the cane, and the manufacture of sugar from it, into the islands of the Mediterranean, Italy, and Spain; but most authorities agree that this was owing to the Arabs, and that it was in some degree connected with the increased communication between Europe and the East, occasioned by the crusades. The cane appears to have been cultivated first in the Morea, and the island of Rhodes, from whence it was introduced successively into Malta, Sicily, Spain, Madeira, and the Canary Islands. The sugar cane was not indigenous to the Western continent, but was carried first to Hispaniola, by Columbus in his second voyage in 1493.

The Venetians are supposed to have been the first sugar-refiners in Europe; but their original operations were made upon the coarse black sugar which they imported from Egypt. Before the discovery of Amer-

ica, sugar was a costly luxury in Europe, used only on rare occasions. The rapid increase in the cultivation of the cane in the fertile islands of the West Indies, soon caused it to become an article of common use, and at the present day it may be reckoned among the necessities of life.

The quantity of sugar produced in different parts of the world from the sugar cane, was estimated in 1839 as follows.

Exported into other Countries.	
British Sugar Colonies, ...	3,571,378 cwts.
British India, ...	519,126 "
Danish West Indies, ...	450,000 "
Dutch " "	260,060 "
French Sugar Colonies, ...	2,160,000 "
United States, ...	900,000 "
Brazil, ...	2,400,000 "
Spanish West Indies, ...	4,481,342 "
Java, ...	892,475 "
For internal consumption exclusive of China, India, Siam, Java, and the United States, ...	
	2,446,337 "
Total,	18,080,658 cwts.

Besides sugar manufactured from the cane, a considerable quantity is made in the United States, from the juice of the maple tree, and in France from the sugar beet. The maple sugar, though of a delicious flavor, is coarse, but capable of being refined to as high a degree as that from the cane.

COFFEE.—Coffee is a kind of berry produced from shrubs, which bear glossy, sharp pointed leaves, and begin to yield fruit when two or three years old. It is a native of that part of Arabia called *Yemen*; but it

is now very extensively cultivated in the southern extremity of India, in Java, the West Indies, Brazil, &c. We are ignorant of the precise period when it began to be roasted, and the decoction used as a drink, though the discovery is not supposed to date further back than the early part of the fifteenth century. No mention of it is made by any ancient writer; nor by any of the moderns previous to the sixteenth century. Leouhart Rauwolf, a German physician, is believed to be the first European who has taken any notice of coffee. His work was published in 1573, but his account is in some respects inaccurate.

A public coffee-house was opened for the first time in London, 1652. A Turkey merchant of the name of Edwards, having brought with him from the Levant some bags of coffee, and a Greek servant accustomed to prepare it, his house was thronged with visitors to see and taste this new sort of liquor, and being desirous to gratify his friends without putting himself to inconvenience, he allowed his servant to make and sell it publicly. In consequence of this permission, the latter opened a coffee-house in St. Michael's Alley, Cornhill, on the spot where the Virginia Coffee-house now stands.

It is said that coffee was first used in France, about the year 1650. The first coffee-house in that country was opened at Marseilles, 1671, and the next was opened at Paris, the following year. Between 1680 and 1690, the Dutch planted coffee-beans they had procured from Mocha, in the vicinity of Batavia. In 1690, they sent a plant to Europe, and it was from

the berries of this that the first coffee plantations in the West Indies and Surinam were supplied.

The following tables contain an estimate of the annual exports of coffee from the principal places where it is produced, and the annual consumption in those countries into which it is imported.

Exports.	Tons.
Arabian Ports, ...	10,000
Java, ...	18,000
Sumatra and other parts of India, ...	8,000
Brazil and Spanish Main, ...	42,000
St. Domingo, ...	20,000
Cuba and Porto Rico, ...	25,000
British West Indies, ...	11,000
Dutch West Indies, ...	5,000
French Colonies, ...	8,000
Total,	147,000
Consumption.	Tons.
Great Britain, ...	10,500
Netherlands, ...	40,500
Germany and Baltic Countries, ...	32,000
Southern Europe, Levant, &c., ...	35,000
United States, ...	20,500
Total,	138,500

Nearly one fourth of the whole is consumed in the United States and Great Britain. In the latter, the consumption is less than 1 lb. per head for the whole population, in the former it is upwards of 3 lbs.

TOBACCO derives its name, according to some, from a province in Yucatan, New Spain, called Tabacca; according to others, from the island of Tobago; and according to others, from Tobasco in the Gulf of Flo-

rida. It was first observed in St. Domingo, in the year 1496, and was used freely by the Spaniards in Yucatan, in the year 1520. It was first brought to England in Elizabeth's reign, by Sir John Hawkins; though some assert that Sir Walter Raleigh and Sir Francis Drake first used it there. There is a curious tale related of Sir Walter, in relation to this plant, to the effect—that his servant saw him smoking a pipe, and thinking he was on fire, threw a pitcher of water on him to put him out!

The first public house in England, where tobacco was ever smoked, was at a little inn in Islington. It appears that it was much used in early days, both by men and *women*! Its cultivation in England was prohibited by Charles the Second, and a duty was laid upon the import, in 1684. The plant was allowed to be cultivated in Ireland, in 1779. Various statutes were passed in relation to it, and among the latest and most singular, are those enacted by the British parliament in August, 1831, prohibiting its culture in Ireland, and another in 1832, by which all the tobacco grown in Ireland, was purchased up and destroyed.

The amount of tobacco used in England in 1791, was nine millions and a half pounds. In 1840 it had reached forty millions.

The tobacco of Virginia is best for pipe smoking; that of Maryland for segars; the Kentucky is intermediate in character; the Havana tobacco, however, excels all others for segars. There is a Dutch tobacco known in the European market, as *Amersfoort*, of a rather poor quality. There are some German varieties not much esteemed. The Manilla and Mexican

tobacco is in demand for *cheroots*, and the Turkish is in some repute; but on the whole, the tobacco of America is the best, and is most highly valued.

The composition of tobacco has been ascertained. In a hundred parts there are 88 of water; bitter extract nearly 3; lignin, with a trace of starch, about 5; albumen and gluten $1\frac{1}{2}$; salts, not quite 1 part; gum, with a little lime, nearly 2; silica, not quite 1 part. There are also traces of some other substances. The expressed juice contains even something more, and the ashes something more.

When a gentleman is smoking a segar, he little knows how much of a chemist he is; when he puffs forth a volume of smoke, he eliminates carbonate and acetate of ammonia, nicotianin, empyreumatic oil, soot, and acids. Tobacco has been a fruitful source of comment. King James was one of the principal enemies of this weed, and his book, called "The Counterblast to Tobacco," is quite famous. Indeed, the literature of the subject, if it may be so termed, would be very amusing. We have on the one hand high eulogium, and on the other severe denunciation. We find, in an old collection of epigrams, the following lines on a tobaccoist:

"All dainty meats I do defie,
Which fat men feed as swine:
He is a frugal man indeed
That on a leaf can dine.
He needs no napkins for his hands,
His fingers' ends to wipe,
That keeps his kitchen in his box,
And roast meat in his pipe."

Tobacco is the principal staple of Virginia and

Maryland, and is now cultivated extensively in Kentucky, Tennessee and Missouri. We learn that the average crop of Virginia is about 50,000 hogsheads a year. It is asserted that nearly two millions of people are directly connected with the culture of tobacco in the United States.—The product of this branch of industry is estimated in round numbers at two millions of pounds annually. The value of our export of this article is about ten millions of dollars. It appears that there is a steady increase in the demand for the article abroad, and in the price obtained per hogshead at home. The market among ourselves is rapidly growing greater, as the use of tobacco in some shape or other is constantly spreading itself. Indeed as we cannot furnish a home manufactured segar as yet of the delicate flavor of the genuine Havana, our imports from Cuba are very heavy—nearly a million of dollars in value per annum. The English Government receives one of the best parts of its revenue from the tobacco imports—nearly sixteen millions of dollars a year. The actual duty per pound is three shillings sterling, levied too on what costs in this country only about six cents. The duty on snuff is six shillings, and on segars nine shillings sterling per pound.

It appears that the duties levied on American tobacco in Great Britain, in Prussia,—where the charge is 30 cents a pound, and in France one dollar a pound—are equivalent to thirty-two millions and a half of dollars charged upon an export of only about ten millions of dollars. France derives by this means a revenue of eleven millions of dollars a year.

SILK.—Aristotle is the first Greek writer who mentions the silkworm, and he states that silk was first spun in the island of Cos in the Archipelago, from raw materials brought from the east. Pliny affirms that the silk came from Assyria, and was worked up by the Greek women. It is highly probable that silk was used in Western Asia before it was known to the Greeks; and that it was in use among these latter people, long before they knew whence the material came, or how it was produced. Virgil, in the *Georgics*, supposes that the "Seres," that is, the Chinese, carded the silk from the leaves of trees; and Dionysius Periegetes, a geographer of the Augustan age, speaks of it as a vegetable production. Pausanias, who wrote toward the end of the second century, gives a more accurate account of the substance from which the Seres formed their cloths. "They have," says he, "a spinning insect which is kept in buildings, and produces a fine spun thread which is wrapped about its feet."

It was not till the sixth century that the obscurity respecting this production was cleared up. At this time, silk had become an article of general use among the Romans, and was manufactured for them by the inhabitants of Tyre and Berytus in Phenicia. The Persians monopolized the supply of the raw material, and guarded the trade with so much jealousy both by land and sea, that travellers from or to China, were not allowed to traverse the Persian dominions; and in the time of Justinian, they entirely stopped the importation of silk. At this juncture, two Nestorian monks of Persia, who had visited China, acquainted Justinian

with the method of producing silk, and offered to travel to that country again, and bring back some silkworm's eggs. Being encouraged in this undertaking, they set out, and returned with a quantity of eggs concealed in a hollow cane. These were brought in safety to Constantinople, and hatched by the heat of a dunghill. The worms were fed with mulberry leaves, and from these proceeded the whole of the silk culture and manufacture now existing in the western world.

The breeding of silkworms in Europe was for six hundred years confined to the Greeks. In the twelfth century the art made its way into Sicily, and a century later, into Italy, from which it was successively introduced into Spain and France. In the fifteenth century, the silk manufacture was attempted in England, but without permanent success. Early in the eighteenth century the culture of silk was introduced into Georgia and Carolina, but the business did not thrive. Very recently the attention of the people of the United States has again been drawn to the subject, and the silk culture has been practised to a considerable extent in many parts of the country ; but the final success of the experiment is yet dubious.

France, Spain, and Italy produce most of the silk manufactured in Europe. The silk thread is reeled from the cocoons only in the countries where the silkworm is produced. In plain silk weaving, the process is much the same as in weaving woollen or linen, but the weaver is assisted by a machine for the even distribution of the warp, which frequently consists of 8,000 separate threads in a breadth of twenty inches.

Brocade and damask, the most sumptuous articles of silk manufacture a century ago, are now comparatively unknown. Persian, sarsnet, gros-de-Naples, satin and levantine, are the names given to plain silks which vary from one another only in texture, quality or softness. Satin derives its lustre from the great proportion of the threads of the warp being left visible, and the piece being afterwards passed over heated cylinders. Other varieties of silk goods are produced by mechanical arrangements in the loom, such as using different shuttles with threads of various substances. The Chinese crapes have never yet been successfully imitated, and they particularly excel in the production of damasks and flowered satins.

COTTON.—The cotton plant grows spontaneously in the hot or tropical portions of the globe. It derives its name from the Arabic word *Kotôn*, and is one of the four great materials designed by Providence for human clothing—flax, wool and silk being the other three. It is remarkable that neither of these useful articles was the natural product of Europe. All were indigenous to Asia. Cotton and flax were also natives of Africa and America.

Cotton, which is the most important of these articles was the last to be generally diffused. Silk, wool and linen, were in use three or four thousand years ago, but cotton was introduced at a later date, and up to the time of our Saviour, was almost unknown as a material for clothing, except in India. Even in the middle ages, we hear no mention made of cotton garments in Europe. The Chinese, who have taken the lead in so many arts, did not adopt cotton for use till the eleventh

century, though, for four hundred years previously, they had cultivated it as an ornamental shrub in their gardens. Even at the present day, China imports the wool of this plant for manufacture.

Cotton was grown, to a small extent, in the United States, nearly two hundred years ago; but it was not extensively introduced till many years after. In 1786, Mr. Madison, writing to a friend, says, "there is no reason to doubt that the United States will one day become a great cotton producing country."

In 1792, the whole crop of the country was only 138,328 lbs.; in 1795, it was 6,276,300 lbs.; and in 1842, it was 783,221,800 lbs.

The annual average cotton crop of the United States, is about 500 millions of pounds, of which, about 400 millions is exported as follows:

	lbs.
To Great Britain and Ireland, ...	284,500,000
France, ...	85,000,000
Hanse Towns, ...	4,000,000
Trieste, &c., ...	1,660,000
Netherlands, ...	3,920,000
Other ports, ...	20,500,000
Imports.	lbs.
Great Britain, ...	290,000,090
France, ...	80,000,000
Hanse Towns, ...	6,000,000
Trieste, ...	25,000,000
Netherlands, ...	10,500,000

Brazil, the East Indies, Egypt, &c., are, after the United States, the countries that furnish the largest supplies of cotton. Of 288,000,000 lbs. imported into Great Britain in 1831, 219,330,000 were from the

United States; 31,695,000 from Brazil; 21,805,000 from the East Indies; 7,714,000 from Egypt; 2,401,000 from the British West Indies, &c.

WOOL.—Next to cotton, this is the most important material for human clothing, and appears to have been in use from the earliest ages. It is the produce of the several varieties of sheep, though some kinds, as the Angora and Cashmere wool, are obtained from goats. These, however, are rather of the nature of long fine hair of a silky texture. An attempt has been recently made to introduce into Europe the *alapaca*, a small variety of the llama of South America, which furnishes a species of wool resembling that of the Cashmere goat, but its success has not yet been determined.

The number of sheep in Europe is estimated at about 170,500,000; if we suppose this to be half the number in the world, and estimate the product of wool to be 2 lbs. each, a year, the whole annual consumption of mankind is 628 millions of pounds, or less than one pound to each person.

The number of sheep in Great Britain and Ireland, is estimated at 32 millions, and the wool yielded, may be reckoned as about 100 millions of pounds annually. In addition to this, there are imported, each year, about 35 millions of pounds. This immense quantity is absorbed by the British manufactories.

The number of sheep in the United States is estimated at 20 millions, and their annual product of wool at 45 millions of pounds.

FLAX.—This plant, called *linum* in Latin, and hence the word *linen*, has been cultivated from the

earliest periods of history, for its fibrous bark, as a material for thread and cloth. The present consumption of flax is immense, but we have no means of ascertaining the amount. In 1831, no less than 100 million pounds of flax and tow were imported into Great Britain, and almost the whole was retained for home consumption. The seed of flax is used for making linseed oil, and it is largely imported for this purpose, into our country, from Russia, the Mediterranean, and India. Several oil mills produce 100 thousand gallons a year, and one yields nearly 100 gallons a day. There are many other articles cultivated to an extent which may well excite surprise. If we reflect that about

800,000,000 of human beings,
50,000,000 domesticated horses, asses and mules,
150,000,000 domesticated cattle,
300,000,000 domesticated sheep,
80,000,000 domesticated swine,
12,000,000 domesticated goats,

are to be fed, every day, by the industry of man, we shall have some faint conception of the vast scale upon which the operations of agriculture are conducted. If we conceive that the sun in its daily course, wakes up the whole human race to their labors, and imagine ourselves as accompanying his morning rays in their flight over the world, we may easily fancy the spectacles of activity we should witness, on the hills, and in the valleys, and spreading out from the arctic to the antarctic circle !

That the reader may have some adequate idea of the immense extent of agriculture, in our own country,

which contains but one fortieth of the population of the globe, we offer the following table :

Agricultural products of the United States for 1843.

Wheat, ...	100,310,856 bushels.
Barley, ...	3,220,721 "
Oats, ...	145,929,966 "
Rye, ...	24,280,271 "
Buckwheat, ...	7,959,410 "
Indian Corn, ...	494,618,306 "
Potatoes, ...	105,756,133 "
Hay, ...	15,419,807 tons.
Flax and Hemp, ...	161,707 lbs.
Tobacco, ...	185,731,554 "
Cotton, ...	747,660,090 "
Rice, ...	89,879,145 "
Silk, ...	315,965 "
Sugar, ...	126,400,310 "
Wine, ...	139,240 gallons.

It will be remembered that this table does not include garden vegetables and a great variety of other products; it does not include the poultry, which amounts to several millions of dollars; nor the horses, cattle, sheep and hogs, of which there are probably 40 millions. We see that the grain annually produced in our country amounts to 500 millions of bushels; that the value of the potato crop is 25 millions of dollars; the hay crop 150 millions of dollars: and the Indian corn crop 200 millions of dollars! It is supposed that the whole value of the agricultural products of the United States, exceeds 1000 millions of dollars a year!!

MANUFACTURES.

THERE is no branch of human industry which so wonderfully displays the energy, industry and art of man, as manufactures. The skill required in husbandry, navigation, hunting, fishing or mining, is insignificant when compared with that exhibited in the diversified products of spinning, weaving, dying, forging, sawing, building, printing, stamping, carving, casting, &c. It was said by a Hindoo, in allusion to the steam engine, " These English are very cunning,—we Hindoos catch horse, ox, elephant, water, wind, and make him all work ; but they catch fire and make him work too !" Thus, not only the mechanical powers of the lever, wedge and wheel, are made to aid man in his industrial pursuits, but the very elements are subjected to his sway, and made to do his bidding. In order to aid the mind in forming conceptions of the extent of manufactures, we shall notice separately some of the leading branches of this kind of industry.

COTTON MANUFACTURES.—It is probable that most of our readers have been into a cotton factory, for these establishments are now spread over New England and the Middle States. The scene presented in the interior of one of them, is certainly calculated to impress the beholder with admiring wonder. The

ponderous wheel that communicates life and activity to the whole establishment; the multitude of bands and cogs, which connect the machinery, story above story; the carding engines, which seem like things of life, toiling with steadfast energy; the whirring cylinders, the twirling spindles, the clanking looms—the whole spectacle seeming to present a magic scene in which wood and iron are endowed with the dexterity of the human hand—and where complicated machinery seems to be gifted with intelligence—is surely one of the marvels of the world. It is only because such scenes are familiar and because we have acquired our knowledge of them by slow degrees, that we fail to regard them with unceasing admiration.

Nor will our wonder be abated, when we consider the results of these establishments. A single cotton factory—that of the Merrimack at Lowell—produces 250,000 yards of cotton cloth a week, or 12,500,000 yards a year. There are about 5000 yards of thread in a yard of cloth; thus every working day, this factory spins 600 million feet of thread; 50 millions every working hour, and nearly one million every minute! Thus, a cord of sufficient length to belt the world at the equator, is produced by a single factory, in three hours. This is the work of one establishment, and is not more than a two hundredth part of the whole manufacture of the United States! The length of thread, drawn out by the cotton factories of the world, cannot be less than fifteen millions of feet every working second, or every time the heart beats! Such is the bewildering magnitude of the scale upon which this single branch of human industry is conducted.

The following table will give some idea of the amazing extent of the manufactures of the single town of Lowell.

Yards of cloth, produced annually, ...	71,141,600
Pounds of cotton consumed, ...	22,880,000
Wages paid, ...	1,800,000 dollars.
Consumption of starch, ...	800,000 pounds.
Flour for starch, ...	4,000 "
Charcoal, ...	600,000 bushels.
Number of persons employed, ...	8,540

In these establishments, cotton is the principal article of manufacture; but there are also machine shops, and factories devoted to the production of calicoes, woollen cloths, flannels, carpets, &c. The print-works surpass all the other establishments in the display of human skill. Machinery is so contrived that pieces of cloth hundreds of yards in length, receive their figures in passing rapidly over cylinders, several colors being stamped at the same instant.

Beside the establishments at Lowell, there are nearly 1000 others in the United States, and in several, 1000 pieces of stamped prints, about 28 yards in each, are produced every day. The whole manufacture of this article in the country, is estimated at 100,000 pieces a week! The whole value of the cotton goods manufactured in the United States, annually, is about \$40,000,000. Great Britain consumes 363 millions of pounds of cotton each year, and the value of her cotton manufactures, is supposed to be about 162 millions of dollars annually. Manchester is the great seat of her cotton manufactures, and at night, the numerous establishments present a spectacle like that

of an illuminated city of palaces. Beside this, there are extensive cotton manufactories in France, Netherlands, Belgium, Prussia, &c.

WOOLLEN MANUFACTURES.—These are on an immense scale, in the United States as well as in England, France, Belgium, &c. In the wool factories, we see the same skill of machinery, and the same magical results, as in those for the cotton manufactures. The looms, wrought by steam or water power, to produce figured patterns of cloth, shawls, carpets, &c., display amazing ingenuity.

The annual value of the woollen manufactures of the United States is estimated at about 40 millions of dollars; that of those of Great Britain—producing cloths, kerseymeres, baizes, flannels, carpets, blankets, &c.;—at 96 millions of dollars; and of those of France at 46 millions, &c.

SILK.—In the United States, the manufacture of silk is not extensive, though it is increasing; in Great Britain it is considerable; in France, the annual value is 25 millions of dollars—a wonderful fact, when we consider that every thread is spun by a worm! Thus human skill has not only made the elements, and the larger beasts, the servants of man, but even a worm, and that too, pursuing its own pleasure—in the fulfilment of its destiny—is made to contribute to the highest luxuries of our race. The waving tissue of silk, seeming like woven water—the gorgeous shawl, emulating the ruby or the sapphire, in its hue and its gloss—the light kerchief, the rich brocade, the supple crape—these, destined to add grace to the graceful and become the pride and ornament of the fairest of

the fair—all are the product of that wondrous mechanic, the silk worm! And the amount of toil—how immense—how wonderful! Twenty-five millions of dollars, each year, in France; and this is but a small part of the whole produce of the world!

LINEN MANUFACTURES.—The linen manufactures of the United States, are small, compared with foreign countries. Those of Great Britain produce the value of 30 millions of dollars, annually, and those of France, about 36 millions. The lace of Belgium, chiefly linen, is valued at 5 millions of dollars annually.

IRON MANUFACTURES.—The manufactures of iron have been greatly extended within a few years, owing to the increased facility with which it is wrought, and the new uses to which it has been applied. Though a stubborn metal, the blast furnace now makes it flow like water, and the slitting and rolling mills work it as if it were paste. The wonderful skill, and the amazing mechanical power, now exerted in the manufacture of iron, enable man to mould it to any form which may suit his necessities or even his caprice. The Great Britain, a new steamer, of 3500 tons, now floats upon the water, a mighty palace of iron; iron is used in England for the roofing of houses, the sashes of windows, for posts and pillars; and every year it is being devoted to some new and unwonted use. Within the last fifteen years, it has been introduced for railroads, and now, 40,000 tons are annually used for this purpose in the United States; and 500,000 tons in Europe!

The amount of iron annually produced in the United States, is 300,000 tons, all of which, and much

more, is consumed in this country. The amount of nails alone is supposed to be 50,000 tons. Forty thousand casks, or four million pounds, are annually made by the Boston Co., on the mill-dam. If we suppose that the nails will average 160 to a pound, the number here produced each working day, would be nearly two millions! This is supposed to be but the twenty-fifth part of the nail manufacture of the United States! It seems incredible that about 50 millions of nails are made, bought, sold and used, every day, in the United States—yet such seems to be the fact.

The annual value of the iron manufactures of the United States is reckoned at 50 millions of dollars. In Great Britain it is much more, and iron manufactures are extensive over the whole continent. The great seat of the iron factories of England is Birmingham, and it is amazing to behold the scene presented in some of the large establishments. The bellows, heaving as if with the lungs of a whale; the hammers, striking the blows of giants; the enormous cylinders rolling and crushing the cold metal as if it were potter's clay; and all taking place amid the deafening roar of machinery, the spattering of fiery scintillations, and the glare of furnaces—afford an almost appalling spectacle.

It is impossible to enumerate the diversified uses of iron; we can only say that it directly or indirectly enters into almost every article of comfort and luxury. The house in which we dwell; the clothes we wear; the food we devour, the ship in which we sail; the vehicle in which we travel; the book we read; the pen with which we write; the spit with which we

roast; the pan in which we fry; the knife and fork with which we eat; the bed on which we lie—all, all, are more or less the gift of this important mineral. Iron, indeed, lies at the very foundation of civilization, and without it no great progress can be made in the arts and refinements of life.

We cannot further extend this view of manufactures though there is a multitude of articles, and some of great amount, not here enumerated. In 1837, the manufactures of Massachusetts alone, amounted to 90 millions of dollars, and these included over seventy different kinds of productions.

CONCLUSION.

WE have not space to dilate upon the subjects of this volume, further than to suggest to the reader, that all the great branches of human industry here noticed, are mutual aids and supports of each other. Agriculture, mining, hunting and fishing, are the great producing powers; manufactures endow these products with new value by adapting them to the diversified wants of man, and commerce transports them to the place where they are needed. Thus, the great human family are knit together by commerce, diffusing and distributing the results of human labor, and enabling the people of each clime to enjoy the luxuries of every other!

It appears to be one of the common vices of mankind, for those engaged in one pursuit to be jealous of those engaged in another. A liberal and enlarged view of the diversified industry of man, will dissipate this pernicious error, and teach us to see, in the adjustment of human affairs, the same providential wisdom and care that are displayed in balancing the powers of nature. The lone fisherman upon the banks of Newfoundland, the adventurous whaler in the Pacific, the miner in Sweden, the silk spinner of Savoy, the hunter of Siberia, the manufacturer at Lowell, the merchant of Boston with his ship upon the sea, directly or indirectly benefit the farmer upon the hills of Berkshire ; and he, in return, is a benefit to them. The minute history of the farmer's home, with its food, clothing and utensils, would show that every one of those we have enumerated is that farmer's benefactor. Let him annihilate the fisherman, and his codfish breakfast can be no more enjoyed ; let him destroy the whaler, and his lamp goes out ; let him dispose of the miner, and his tools—his very knife and fork—are gone ; let him kill the silk worm, and the silk gown and ribbon, which please his wife and children, and him also—are banished ; let him discourage the hunter, and the wife's tippet, with the boy's fur cap, must be dispensed with ; let him destroy manufactures, and his facilities for clothing are destroyed ; let him banish the merchant, and the means by which he exchanges his surplus produce for these comforts, are gone forever. Even if he chooses to live without such comforts, let him annihilate the people who produce them, and his purchasers—his markets—are

also annihilated. Let these abandon their several employments, and devote themselves to his, and the world will be overstocked with agricultural products, while they will be in a state of destitution as to a thousand of the common comforts of life. The true philosophy is to regard the whole human race, who hold commercial intercourse, as one family, and continually contributing to each other's happiness. He who would sow the seeds of jealousy or envy among them, is no friend, but an enemy to humanity. Such is the lesson of Christianity and political economy.











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